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UMOD 2.10.1

# Unit Movement and Deployment Plans

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612-203-02

**The force projection planning effort involves all levels of command -- from the JCS and Joint Force Commander, to individual units. It is a UMO responsibility to develop and maintain unit movement plans. These movement plans are often based on higher headquarter or JFC contingency plans that include the unit as part of the plan task organization. As the UMO, you are the critical link for ensuring that your unit's movement plan is workable and includes all considerations and tasks necessary to implement the contingency plan. The success of your unit's deployment may hinge on the thoroughness of your planning efforts.**

**To develop your unit's movement plans you must understand the different types of movement plans, the plan format, and the type of information that is included within the plan. Once the plan is developed, it must be tested to ensure that it adequately supports your unit's deployment mission. Once tested, the plan is changed or refined as required. After the plan is completed, it is reviewed periodically by the UMO and the commander to ensure planning assumptions or other previous plan development guidance is valid. You, as UMO, are the key player for developing and maintaining unit movement plans.**



## Two Types of Unit Movement Plans



**UMOD 2.10.1.1**

### Mobilization Movement Plan

Moves RC units  
from HS to MS

### Deployment Movement Plan

Moves AC & RC  
from MOBSTA  
or installation  
to POE

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The two basic types of movement plans are mobilization movement plans and deployment movement plans. Reserve Component units develop mobilization movement plans for the movement of assigned personnel, equipment, and supplies from home station and equipment sites (if required) to mobilization stations or mobilization sites.

Units that are required to deploy based on an operations plan, exercise, or change of station orders, develop deployment plans. For active component units, deployment plans cover movements from home stations through the POEs. For Reserve Component units, deployment plans normally begin with departure from their mobilization station and continue through movement and arrival at ports of embarkation. Reserve Component units are often required to develop both mobilization and deployment plans in support of OPLANs. Deployment movement plans can include movement activities beyond the POE if the strategic deployment mode is known and information concerning RSO&I at the destination is available.

This lesson will focus on developing deployment movement plans in support of operations plans. Mobilization movement plans are prepared in the same format and include much of the same type of information. Chapter 5 of FORSCOM/ARNG Regulation 55-1 provides specific information for developing mobilization plans.





## Movement Plan Development -- General Guidance



**UMOD 2.10.1.2**

- Movement plans define responsibilities & functions for each part of unit move
  - Written in five paragraph OPLAN format
  - Includes planning for all modes used during the movement
  - Each mode requires special documentation & planning

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Unit movement plans define specific functions, responsibilities and details for each part of the unit move. They contain the preparation steps required for deployment. Movement plans are written in five-paragraph OPORD format. This format can be found in FM 101-5 or in the sample movement plan in Appendix H to FORSCOM/ARNG Regulation 55-1. Movement plans also provide guidance for movement by all modes that will be used if the movement plan is executed. For example, unit soldiers may move to POEs by unit convoy or commercial or military bus. Unit equipment could move to POEs by a combination of convoy, rail, or commercial trucking. The strategic movement mode from POE to POD could include both airlift and sealift. Each of these modes has special planning and documentation requirements which must be considered in the movement plan.



## Movement Plan Development -- General Guidance (Cont)



UMOD 2.10.1.3

- Deployment movement plans based on OPLANs, exercises, unit change of station. Unit could have multiple deployment plans
- OPLANs normally contain TPFDD
  - TPFDD includes info on POE, POD, deployment strategic mode (air, sea) & timelines

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**As previously mentioned, deployment movement plans are based on unit participation or task organization as part of operations plans, exercises, or permanent or temporary unit change of stations. If a unit is part of the task organization for multiple operations plans, it will develop deployment plans in support of each OPLAN. The unit could also develop deployment plans to support major exercises involving strategic deployment.**

**A key OPLAN document is the time phased force deployment data, or (TPFDD). The TPFDD contains movement data for units that are deploying as part of the operations plan. The UMO uses this document to determine the unit's port of embarkation and debarkation, the strategic deployment modes, and unit timelines for arrival at POE and POD. The TPFDD also includes the unit's deployment increments as identified by Unit Line Numbers (ULN). These increments could be advance party, main body, and equipment sealift and airlift requirements for any specific segment of the movement requirement.**

**At company level, the UMO will probably not see an actual TPFDD. The information will be passed to them in a movement plan from their higher headquarters.**





## Ten Steps to Developing Deployment Movement Plans



- FORSCOM/ARNG Regulation 55-1 provides detailed information for each step

- 1 Identify what needs to be moved



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For the next few minutes we'll discuss a recommended process the UMO can use for developing a deployment movement plan. These steps are taken from Chapter 5 of FORSCOM/ARNG Regulation 55-1, and are applicable to all units with a deployment mission.

Step 1 is Identify what needs to be moved.

(1) Based upon mission requirements (mission, enemy, terrain, troops, and time available and civilian considerations [METT-TC]) and command guidance, deployment planning must reflect personnel, equipment, supplies, and how the unit will accomplish the move. For planning purposes, units plan to deploy with assigned personnel and on-hand equipment. Upon execution, the plan may need to be modified if additional personnel are assigned or equipment cross-leveled to bring the unit to the required readiness level. Units should plan to move their basic load of supplies to sustain their operations upon arrival in the area of operation (AO). The days of supply for each supply class that are carried by the unit are normally identified in OPLANs, unit SOPs or major command (MACOM) instructions.

(2) UMOs review their unit's MTOE, and unit property books to determine equipment movement requirements. The UMO must have a detailed listing of each piece of equipment to be deployed. All outsize, oversize, overweight, or hazardous equipment /cargo must be identified as it will require special considerations.

(3) We'll discuss APS operations, including unit planning actions for APS operations, in more detail in the RSO&I lesson which will be presented later in the course.



## Deployment Movement Plans -- Step 2



**UMOD 2.10.1.5**

### ② Identify:

- Yellow TAT - Equipment to accompany troops
- Red TAT - Equipment troops need immediately upon arrival
- NTAT - Equipment which does not have to accompany troops

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612-203-02

any troops  
t which is not to

accompany troops (NTAT).

(1) Yellow TAT must accompany troops and be accessible enroute. Examples include Class I basic load items and individual carry on baggage and may include weapons. For personnel traveling via commercial air, this is normally limited to the baggage that will fit under the seat.

(2) Red TAT must be available at the destination before or upon unit arrival. This equipment may be sensitive cargo that requires special security or handling at the POE or POD. Examples of Red TAT are individual weapons when soldiers deploy on commercial aircraft or toolboxes that will be required immediately upon arrival at the POD. Red TAT must be unitized/palletized and reported on the Automated Unit Equipment List (AUEL) and the Deployment Equipment List (DEL). It is essential that Red TAT be accurately reported. For example, soldier's baggage will normally be palletized. The number of bags reported will determine how many 463L pallets are required. If the baggage count is understated, there may not be enough room on the allocated aircraft to accommodate all deploying passengers and their Red TAT items.

(3) NTAT equipment is normally shipped by surface and does not accompany the troops. It consists of all other equipment required by the unit to perform its mission. Examples of NTAT are unit vehicles, containers, or other





## Deployment Movement Plans -- Step 3



**UMOD 2.10.1.6**

### ③ Identify air movement requirements

- Advance parties
- Personnel
- Baggage
- Balance of equipment normally moves by sea



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**Step 3 requires Identification of air movement requirements. This normally includes personnel such as main body and advance parties, their accompanying baggage, and some equipment. The balance of equipment normally moves by sea. For deployments supporting operations plans, the TPFDD will designate the strategic movement mode.**



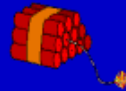
## Deployment Movement Plans -- Step 4



UMOD 2.10.1.7

1 Identify hazardous, sensitive & classified cargo for:

- Packaging
- Labeling
- Segregating
- Placarding for movement



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Step 4 is Identify hazardous cargo and sensitive and classified items for proper packaging, labeling, segregating, and placarding for movement. You must identify all unit HAZMAT and carefully plan for its deployment as its handling and documentation requirements are different than other cargo. Failure to identify these items will definitely result in deployment delays. We'll discuss hazardous cargo movement requirements in detail in an upcoming lesson. Chapter 5 and Appendix M of FORSCOM/ARNG Reg 55-1 provide general guidance for hazardous and sensitive cargo movement (by air and sea) for FORSCOM units to include guidelines for moving ammunition basic loads and individual weapons. Additionally, Appendix F to FM 55-65 provides guidelines for classified and sensitive cargo movement.





## Deployment Movement Plans -- Steps 5 - 6



UMOD 2.10.1.8

⑤ Identify bulk cargo to be moved & develop packing lists (DD 1750 or DA 5748-R)

⑥ Develop vehicle load plans (FORSCOM 285-R or DA 5748-R)



not need identification such as empty vehicles, nested cans, or bundled shovels. These items must, however, be listed on the load diagram if loaded in a truck or container. Packing lists are not required for items that do

Step 6 is Developing vehicle load plans for unit equipment. This step also includes those activities that are necessary to prepare and configure vehicles and equipment for shipment.

(1) Vehicle load plans are recorded on DA Form 5748-R for organic vehicles and trailers carrying secondary loads. FORSCOM units may use FORSCOM Form 285-R for preparing vehicle load plans, instead of DA Form 5748-R. Additional guidance for preparing vehicles for movement is contained in FM 55-65, Appendix A and C. Equipment that cannot be loaded on organic vehicles should be planned for movement by other means such as container, commercial rail, highway, or other military assets. The ITO is the installation POC for obtaining commercial transportation to move equipment to POE that is beyond the unit's organic capability.

(2) Unit cargo, including vehicles and equipment, is prepared for shipment according to the mode of transportation and the type of move. Depending on the strategic lift for deployment, full reduction may or may not be required. Reduction details are normally in the MTMC Port Call Message or the operations order for sealift. For deployment by air, reduction is determined by type of aircraft and will be detailed in the AMC Port Call Message. Military Traffic Management Command Transportation Engineering Agency (MTMCTEA) Reference 99-55-24, Vehicle Preparation Handbook for Fixed Wing Air Movement provides guidance for preparing vehicles for airlift. Once all your vehicle load plans and packing lists have been finalized, copies of these lists will be maintained in the unit movement binder.

(3) Vehicle modifications (e.g., shelters, bumper modifications) made by the unit which change the vehicle configuration, dimensions or weight normally must be approved by the unit's MACOM and ultimately by the MTMC Transportation Engineering Agency. Modified vehicles cannot be deployed without this approval. Vehicle modifications must be reflected on the AUCL and DEL. Information on dimensions, weights, and cubes for all Army equipment is in CD-ROM and worldwide web versions of TB 55-46-1, Standard Characteristics (Dimensions, Weight, and Cube) for Transportability of Military Vehicles and Other



## Deployment Movement Plans -- Steps 7- 8



UMOD 2.10.1.9

- ⑦ Identify BBPCT requirements
- ⑧ Translate what needs to move into transportation terms (AUEL / DEL) using TC-ACCIS (TC-AIMS II)

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612-203-02

Step 7 is Identify BBPCT requirements, crating and tie-downs. BBPCT items, equipment, materials, containers, boxes, barrels, and loose equipment on a vehicle must be blocked, braced, and tied-down to prevent shifting during transit. The UMO must identify these requirements as part of the plan development process and then coordinate to ensure the items are on-hand or can be made available during deployment preparation. The POC for obtaining blocking and bracing items is normally the Installation Director of Public Works. Reserve Component units often use local purchase procedures to buy BBPCT items from local hardware stores. Chapter 6 of FORSCOM/ARNG Regulation 55-1 prescribes policy for obtaining and stocking BBPCT materials and related railcar loading equipment for all FORSCOM mobilizing and deploying units.

Step 8 is Translate what needs to be moved into transportation terms using TC-ACCIS. The UMO is required to keep up-to-date unit movement data (UMD) using TC-ACCIS. Personnel and equipment data are translated into transportation terminology as UMD and recorded on the Automated Unit Equipment List (AUEL). The AUEL is a TC-ACCIS generated computerized listing of on-hand equipment in a unit. The Summary and Detail AUEL Report is filed with the unit movement plan. The AUEL should not only include the vehicles your unit will deploy but also the planned secondary loads, etc. Upon deployment execution, units use TC-ACCIS to update the AUEL and create the deployment equipment list (DEL). The DEL is an AUEL tailored for a specific move. It lists the equipment that will actually deploy. The ITO's Unit





## Deployment Movement Plans -- Steps 9 - 10



**UMOD 2.10.1.10**

- ⑨ Determine *how* personnel & equipment will move to POE
- ⑩ Prepare the unit deployment movement plan
  - Validate plan annually by conducting actual load out
  - Update the plan & AUEL as changes occur

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612-203-02

and equipment will move to the POE. In CONUS, roadable wheeled vehicles normally convoy when distances are less than one day drive, which is considered less than 400 miles. Tracked vehicles move via military heavy equipment transporters (HET) or commercial rail, truck, or inland waterway. Unit personnel usually move to the POE by organic vehicles or by military or commercial buses. Army rotary wing aircraft normally self-deploy to the POE where they are then prepared for shipment. The UMO should check with the unit's higher headquarters movement officer when planning movement to POE. In some cases higher headquarters (divisions, brigades, battalions) direct the mode subordinate units will use for movement to POE in support of OPLANS.

Note: Roadable wheeled vehicles are those vehicles which can travel on US highways and maintain an average speed of 45 mph. The term roadable is used because some wheeled vehicles, such as rough terrain forklifts, could not travel significant distances or maintain required speeds on public roads.

Step 10 is Preparing the Unit Deployment Movement Plan. As we discussed previously, the plan is developed in five-paragraph operations plan format. Appendix H to FORSCOM/ARNG Regulation 55-1 provides a sample movement plan which covers more movement considerations than we discussed in the 10 planning steps. The UMO must consider the administrative and logistical requirements to support the plan. This includes items such as enroute medical, messing and maintenance for movement to POE.

Once the plan is developed, it must be validated annually. This means testing the plan by actually loading out the unit to ensure the plan adequately supports your unit's deployment mission. Based on testing, the plan is changed or refined as required (including changes to vehicle load cards and packing lists). The completed movement plan is reviewed periodically by the UMO and the commander to ensure planning assumptions or other previous plan development guidance is valid. The plan and the AUEL are updated as changes occur in the operations plan, equipment, commanders intent, and upon mission execution. Significant changes in equipment that affect transportation requirements are reported to the Unit Movement Coordinator as they occur. The importance of the AUEL, which is used to produce the DEL, cannot be overemphasized. The DEL is used to produce the unit's equipment manifest, to create military shipping labels (MSI's), and to update the TPEDD in the Joint



## Movement Plan Format



UMOD 2.10.1.11

- Written in five paragraph field order format -- used for OPLANS/OPORDS
- Plans contain assumptions -- orders do not
- Plans become orders upon execution
  - Assumptions are validated
  - Actual execution times are added

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Movement plans and movement orders are written in five-paragraph field order format. This is the same format used for developing operation plans and operations orders. Plans are developed to prepare for anticipated operations. Because they concern future operations plans contain assumptions, which orders do not. Assumptions form the basis of the plan. The assumptions must be revalidated prior to plan execution. Plans become orders when the conditions of execution occur and execution times are determined. If you have prepared a comprehensive movement plan (and validated the plan), it will take much less time to create the movement order when you are alerted for movement.





## Movement Plan Format -- Basic Plan



UMOD 2.10.1.12

- Movement Plan Paragraphs

- ① Situation
- ② Mission
- ③ Execution
- ④ Service Support
- ⑤ Command & Signal

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These are the five paragraphs used for developing the movement plan. We'll discuss each paragraph in detail in the second part of the lesson.

- (1) Situation
- (2) Mission
- (3) Execution
- (4) Service Support
- (5) Command and Signal



## Movement Plan Format -- Annexes



UMOD 2.10.1.13

- Annexes provide details not in basic plan
- Operations plans and orders have specified annexes (FM 101-5)
- Movement plans have annexes as required
- Annexes and appendices follow same general format as basic plan

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Annexes contain details, responsibilities, and instructions for specific movement tasks that are not easily included in the basic plan. They keep the plan's basic text short. Operations plans and operations orders have a specified sequence of annexes that must be followed. Movement plans include annexes as required to provide sufficient detail for movement planning and execution. The format for Annexes and Appendices is the same as the five paragraph OPLAN format we identified on the previous slide. It includes situation, mission, execution, service support, and command and signal. In the second part of the lesson we'll look at several common annexes that are often included with movement plans.





## Paragraph 1 -- Situation



UMOD 2.10.1.14

- Situation Includes subparagraphs:
  - a **Enemy Forces:** Refer to Annex B (Intell) or current INTSUM (also covers terrorist threats)
  - b **Friendly Forces:** Higher HQ's related mission, task organization, & other supporting activities
  - c **Attachments & Detachments:** Listed with appropriate units or the word "none"

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612-203-02

**Paragraph 1** This paragraph contains four subparagraphs which describe the operational situation as it is known and any assumptions.

**(1) Enemy Forces.** This subparagraph includes any information on enemy forces that may affect the plan. It normally refers to Annex B, Intelligence of the higher headquarters OPLAN your movement plan is supporting. It could also refer to the current intelligence summary (INTSUM) at the time the plan is executed. This paragraph should also contain any potential terrorist threat that could affect the plan.

**(2) Friendly Forces.** This subparagraph contains the concept of operations and missions for headquarters one to two levels above the deploying unit. It only includes those headquarters whose missions impact the unit's movement plan. For example, if a battalion level plan has described the movement concept or mission, the subordinate company should include the guidance in their movement plan. Also include the unit's task organization for executing the plan, and any other organizations/activities that are directly supporting the plan.

**(3) Attachments and Detachments.** List any units/elements that will be attached or detached for plan execution, or enter the word "none"



## Paragraph 1 -- Situation - Assumptions



- Situation (Cont')
  - d Assumptions: State critical assumptions that form the basis of the plan
- Assumptions could address:
  - Equipment serviceability
  - Availability of personnel for movement
  - Availability of supporting transportation

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612-203-02

(4) Assumptions. These are conditions a commander believes will exist at the time the plan is executed. They fill a void when facts are unknown. An assumption should only be used if it is essential for continued planning. If planning can continue without the assumption, the assumption should be deleted.

Assumptions are clearly stated and could address the following subjects:

- (1) Equipment serviceability
- (2) Personnel strength or availability
- (3) Availability of specialized or critical supporting transportation





## Paragraph 1 -- Situation - Examples of Assumptions



UMOD 2.10.1.16

- Example assumptions:
  - "At least 90 percent of unit vehicles will be in serviceable condition"
  - "All MTO&E equipment and supplies will be transported to the Mobilization Station" (RC only)

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612-203-02

This slides shows two example assumptions. Remember, the assumptions must be essential for movement planning to continue. Consider the first example, which assumes that 90 percent of the unit's vehicles are in serviceable condition upon plan execution. If the unit is required to convoy its equipment to the SPOE by organic vehicles in one lift, and it requires at least 90 percent of its vehicles to perform this task, then the assumption is valid. Without a 90 percent availability rate the unit cannot accomplish the movement mission in the time allocated. This could disrupt the units required available to load dates at the POE, and invalidate any continued planning.



## Paragraph 2 -- Mission



UMOD 2.10.1.17

- A concise statement of what is to be accomplished & its purpose. Addresses the following:
  - Identifies unit(s)
  - Identifies origin & destination
  - Identifies when the move will occur
  - Identifies reason for moving

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The mission paragraph is a concise statement of what is to be accomplished. There are no subparagraphs. The mission statement includes the following:

- (1) Identifies the unit(s)
- (2) Identifies the unit's origin and destination
- (3) Identifies when the move will occur
- (4) Identifies the movement purpose

We'll now look at example mission statements for deployment.





## Example of a Deployment Mission Statement



UMOD 2.10.1.18

- "The 99th Transportation Company will deploy from Fort Eustis via APOE Langley AFB and SPOE Norfolk Navy Base in order to arrive at (theater of OPS) NLT (date) in support of Operation Example."

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612-203-02

An example of a mission statement from a deployment movement plan is as follows:  
The 99th Transportation Company will deploy from Fort Eustis via APOE Langley AFB and SPOE Norfolk Naval Base to arrive at ( Theater of OPS ) NLT (date) in support of Operation Example.  
Note that both these mission statements contain the basic who, what, when, where and why elements required for a mission statement.



## Paragraph 3 -- Execution



- Execution: Addresses method for accomplishing mission. Includes commander's intent, specific tasks, and planning, coordination & execution functions that must be accomplished.
- Subparagraphs include:
  - a Concept of Operations
  - b Tasks to Subordinate Units / Elements
  - c Coordinating Instructions

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612-203-02

The execution paragraph addresses how the mission will be accomplished. It begins with the commander's intent and includes specific tasks and planning, coordination and execution functions that must take place to accomplish the mission. The three major subparagraphs within execution are concept of operations, tasks to subordinate units / elements, and coordinating instructions.





## Execution -- Concept of Operations



UMOD 2.10.1.20

- Addresses how the movement will take place. Describes:
  - How unit will organize for move (advance party, main body)
  - How equipment & personnel will move from HS to POE, and from POE to POD
  - Unit activities at POEs
  - RSO&I activities (if known)

UMODPC 612-203-02 describes how the movement will take place. Some commands identify this paragraph as the Concept of Movement when it is used in movement plans. It contains the concept for movement to accomplish the mission. Shown on the slide are a number of movement activities that should be addressed or considered for inclusion in this paragraph. The list is not all inclusive.

- (1) How the unit will organize internally to execute the move.
- (2) How equipment and personnel will move, by mode, from installation to POE, and from POE to POD.
- (3) Unit activities at the POE to include POE marshaling areas.
- (4) Reception, Staging, Onward Movement and Integration. If the operations plan that the unit's movement plan is supporting includes RSO&I operations, the deploying unit includes applicable activities in their unit movement plan.



## Concept of Operations -- Example



UMOD 2.10.1.21

"The unit will move in three phases. In phase I, the advance party deploys by air to APOD \_\_\_\_\_ to prepare for main body arrival. In phase II, main body personnel will deploy by air to APOD \_\_\_\_\_ and unit equipment will deploy by sea to SPOD \_\_\_\_\_. In phase III, unit will convoy from the SPOD to the tactical assembly area"

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The slide shows an example of a concept of operations paragraph for a unit moving soldiers by air and equipment by sea. It is a general statement of how the move will be accomplished. It is followed by detailed unit taskings and timelines that the unit must execute.

The unit will move in three phases. In Phase I, the advance party deploys by air to APOD\_\_\_\_ to prepare for main body arrival. In phase II, unit main body personnel will deploy by air to APOD\_\_\_\_ and unit equipment will deploy by sea. In phase III, the unit will convoy from the SPOD to the tactical assembly area.





## Execution -- Tasks to Subordinate Units



UMOD 2.10.1.22

- Clarifies & states tasks in sufficient detail to insure action by platoons / sections, and subordinates within the unit
- Addresses movement tasks applicable to all subordinate organizations
- Addresses movement tasks specific to:
  - Company, platoon or sections
  - Advance party / main body
  - Supply Officer/NCO, Training Officer, Security

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612-203-02

The purpose of this subparagraph is to identify and clarify tasks that platoons, sections, and subordinates must perform to accomplish the movement mission. It also identifies tasks for the advance party and main body, or any other temporary unit organizations created to accomplish the move. Specific taskings could address required movement activities for:

- (1) Company, platoon, or sections
- (2) Unit advance party and main body
- (3) Supply Officer/NCO, Training Officer, Security Officer



## Execution -- Tasks to Subordinate Units (Cont)



UMOD 2.10.1.23

- Addresses movement tasks (Cont):
  - Maintenance section
  - Food Service Officer / NCO
  - Rear detachment OIC
  - NBC NCO
- Tasks company, platoon, section for:
  - Loading teams, convoy guides,
  - Rail guards, supercargoes

UMODPC

612-203-02

- (4) Maintenance Section
- (5) Food Service Officer/NCO
- (6) Rear detachment OIC
- (7) NBC NCO

This paragraph may also task subordinate units to provide:

- (1) Loading teams, convoy guides
- (2) Rail guards, supercargoes.





## Subordinate Unit Tasks -- Examples



UMOD 2.10.1.24

- Examples of tasks to subordinates:
  - "Maintenance section will provide one supercargo to accompany vehicles during movement from SPOE to SPOD ..."
  - "Second Platoon will provide one rail load team at the rail load site NLT ..."

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612-203-02

Examples of tasks listed in this section are:

- (1) Maintenance section will provide one supercargo to accompany vehicles during movement from SPOE to SPOD.
- (2) Second platoon will provide two rail load teams at installation rail load site NLT \_\_.



## Execution -- Coordinating Instructions



UMOD 2.10.1.2

- Coordinating Instructions list required coordination for planning & executing move
- Includes timing for unit arrival / departure at key nodes. As an example:
  - C+20: Advance party moves from installation to APOE
  - C+21: Advance party departs APOE Langley AFB on AMC aircraft

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612-203-02

**Coordinating instructions identify movement coordination tasks that the unit or its subordinate elements must accomplish for planning and executing the move. It also includes commands and organizations that the unit must coordinate with for move execution. Coordination requirements that are included in unit SOPs are omitted from this paragraph. This paragraph (or a plan annex) also includes, in chronological order, the detailed timings for unit arrival and departure from the various transportation nodes required to accomplish the mission. The OPLAN TPFDD will identify POE and POD unit arrivals and POE departures in terms of C-days. The unit uses these dates to backward plan its move to POE and to plan movement from POD to theater destinations. An example of timings based on the example concept of operations we previously used could begin as follows:**

- (1) C+20 - Advance Party moves from installation to APOE**
- (2) C+21 - Advance party departs APOE, Langley AFB, on AMC Aircraft**





## Execution -- Coordinating Instructions (Cont)



- Timings (Cont')
  - C+21: Advance party arrives APOD
  - C+23: Advance party departs APOD for SPOD via commercial bus
- Required coordination could include:
  - Higher headquarters
  - Mobilization Station, Installation UMC
  - Key organizations at transportation nodes (A/DACG, PSA, Support unit)

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612-203-02

**(3) C+21 - Advance party arrives APOD**

**(4) C+22 - Advance party departs APOD for SPOD via commercial bus**

**There are a number of organizations and activities that the unit must coordinate with to accomplish movement. These could include:**

**(1) Unit higher headquarters**

**(2) Mobilization Stations and the Installation Unit Movement Coordinator**

**(3) Key command, control, and support organizations located at transportation nodes the unit will use. Examples are the Departure Airfield Control Group at the APOE, the port operator or manager at SPOE, and designated units or control elements that may be supporting deploying units in POE marshaling areas.**



## Paragraph 4 -- Service Support



UMOD 2.10.1.27

- Identifies logistic support concept and support responsibilities and procedures during move
  - Information may be in basic plan or annexes, depending on level of detail
- Materiel and Service sub-paragraph includes:
  - Supply support to unit move by class of supply (rations, fuel, BBPCT, repair parts)

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612-203-02

Paragraph 4 identifies the movement plan's logistic support concept and focuses on responsibilities and procedures needed to support the unit's move. It may be organized based on movement phases or activities that occur before, during and after the movement. This information may be listed in either the basic plan or as annexes to the plan. As a guide, if the information will fit on one page, include it in the body of the plan. If the information takes more than a page, consider placing it in the annex. The materiel and services subparagraph normally identifies supply support by classes of supply and maintenance and transportation services that will support the move. Supply support for the movement addresses items such as rations, fuel, repair parts and how blocking, bracing, packing, crating, and tie down materials (BBPCT) will be provided.





## Service Support -- Supply



UMD 2.10.1.28

- Entries which could be included in supply subparagraph:
  - Supply: Class III (Annex \_\_) - POL:
    - + Enroute fueling facilities (if applicable)
    - + Fuel purging at POEs

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612-203-02

**Shown are several Class III examples which could be included in the supply subparagraph or in the supply or classes of supply annexes to the plan. They include:**

- (1) Responsibilities and procedures for providing enroute fueling during the unit's move. This could include procedures for commercial refueling or identify support units that provide fuel from military tankers at designated locations.**
- (2) Identifying how any required fuel purging will be accomplished in POE marshaling and operational areas.**



## Service Support -- Maintenance



**UMOD 2.10.1.29**

- Maintenance subparagraph identifies maintenance support responsibilities & procedures for move. Could include:
  - Pre-movement support requirements
  - Maintenance / repair procedures during movement to POE
  - Maintenance support for unserviceable vehicles at POE

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612-203-02

**The maintenance paragraph normally identifies required maintenance support activities prior to, during the move, and at move completion. It could include:**

**(1) Pre-movement requirements such as maintenance support provided in the unit marshaling area or in installation staging areas.**

**(2) The plan for repairing and recovering vehicles that break down or are involved in accidents during the move.**

**(3) How maintenance support will be accomplished at the POE.**





## Service Support -- Transportation



UMOD 2.10.1.30

- Transportation subparagraph provides detailed responsibilities/procedures for movement by required modes. Annexes normally used.
  - Air (Annex \_\_)
  - Convoy (Annex \_\_)
  - Rail (Annex \_\_)
  - Commercial Containers (Annex \_\_)
  - Unit Movement Data (UMD) (Annex \_\_)

UMODPC

612-203-02

needed to identify supporting the deployment. Due to the amount of detail, annexes are normally used. It should also address related movement areas such as procedures for using military or commercial containers.

(1) The Air annex addresses passengers, to-accompany-troop (TAT ) items such as baggage, and equipment processing procedures for air movement. It could also include unit air load team requirements.

(2) The convoy annex should address unit requirements and procedures for conducting any convoys called for in the movement plan. It could contain partially prepared convoy clearance requests, strip maps for drivers, and vehicle preparation requirements.

(3) For units deploying equipment or passengers by rail, the rail annex may include rail load plans, security guard and load team procedures, and required actions/checklists for preparing equipment for rail movement.

(4) The unit may use commercial or military containers to support the move. This annex identifies procedures for obtaining and spotting containers, as required.

(5) The unit should include a copy of the AUEL as an annex. The AUEL identifies the equipment movement requirements that were used during plan development. If changes are made to the AUEL, the UMO must review the plan to identify any needed changes in the number of transportation assets (trucks, rail cars, and aircraft) that may be required. The UMO processes these changes with higher headquarters and the supporting UMC or movement



## Service Support -- Other



UMOD 2.10.1.

- Other major paragraphs or annexes that may be required:
  - Procurement (Annex \_\_)
  - Facilities / Equipment (Annex \_\_)
  - Medical Procedures (Annex \_\_)
  - Safety (Annex \_\_)

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612-203-02

**There may be other service support subparagraphs or annexes required to support the plan. These paragraphs or annexes could include:**

**(1) Procurement - This annex normally includes procedures for procuring items that will be needed upon deployment execution. It may include commercial procurement procedures for select items.**

**(2) Facilities/Equipment - Identifies any facilities, such as convoy support centers, that will support en route movement. This annex also identifies any special equipment required for loading and unloading operations, such as material handling equipment (MHE).**

**(3) Medical Procedures - This subparagraph or annex identifies any medical evacuation procedures that will be used during the move and can include medical support at the POEs.**

**(4) Safety - The safety section should identify any safety requirements specific to movement modes. For example, safety procedures should be included for rail operations and unit convoys if both of these modes will be used. It could also include safety procedures and references for handling and transporting hazardous cargo.**





## Paragraph 5 -- Command & Signal



**UMOD 2.10.1.32**

- Command paragraph addresses:
  - Chain of command (including convoy commanders, bus troop commanders, etc.)
  - Command locations during move
  - Personnel control (formations, briefings, safety)

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612-203-02

**This paragraph addresses the following:**

- (1) Identification of the chain of command if it is not addressed in the unit SOP. The chain of command should include convoy commanders, bus troop commanders, train commanders and other such positions that are established to support the unit move.**
- (2) The location of unit command posts during the move.**
- (3) Personnel control procedures that will be used prior to, during and at move completion. This could include required formations such as driver safety briefings.**



## Paragraph 5 -- Command & Signal (Cont)



**UMOD 2.10.1.33**

- Signal paragraph addresses:
  - Signal instructions not included in SOPs
  - Reporting procedures, times and formats
  - Current signal operating instructions (SOI) in effect.

UMODPC

612-203-02

**The signal paragraph lists signal instructions not specified in unit SOPs, and identifies reporting procedures, times, and formats. It also includes the signal operating instructions that will be in effect.**





## Plan Signatures



**UMOD 2.10.1.34**

"The movement plan must be signed by the commander or a specifically authorized representative."

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612-203-02

**The unit commander or an authorized representative signs the original movement plan. If the representative signs the original, add the phrase for the commander.**

## **SUMMARY --**

**UMOD 2.10.1**

During this part of the lesson we identified and discussed the major paragraphs in a movement plan and their contents. In summary:

(1) Paragraph 1 of the movement plan is Situation. It includes information on enemy forces that may affect the plan, and information on friendly forces whose mission impacts the unit's movement plan. It also includes any units that will be attached to or detached from the unit during movement plan execution. An important part of the situation paragraph is assumptions.

Operations or movement plans contain assumptions as required. Operations or movement orders do not. Assumptions are conditions the commander believes will exist at the time the plan is executed. An assumption should only be used if it is essential for continued planning. If planning can continue without the assumption, the assumption should be deleted.

(2) Paragraph 2 is the movement plan Mission statement. The mission paragraph is a concise statement of what is to be accomplished. It contains who, what, when, where, and why elements. There are no subparagraphs in paragraph 2.

(3) The third paragraph is Execution. It addresses how the movement mission will be accomplished. It begins with the commander's intent and includes specific tasks, coordination, and execution functions that must take place to accomplish the movement mission. The three major subparagraphs within the execution paragraph are concept of operations (or movement), tasks to subordinate units, and coordinating instructions.

(4) Paragraph 4 is Service Support. This paragraph identifies the movement plan's logistics support concept and focuses on responsibilities and procedures needed to support the unit's move. Its subparagraphs normally address materiel and services to include supply, maintenance and transportation support. The transportation subparagraph identifies the movement details for each mode supporting the deployment. Annexes are often used to provide the detailed information that is normally a part of the service support paragraph.

(5) The fifth paragraph is Command and Signal. It addresses the chain of command that is in effect during the move, command post locations and personnel control procedures. It also includes movement reporting procedures, times, and formats.

(6) Annexes to the plan are used when detailed and lengthy information is required. For movement plans, there is no set order for attaching annexes.

(7) Your movement plan should be as detailed as possible, Remember the better the plan, the easier it is to convert it into the actual Deployment Order.





# Airlift Operations



**UMOD 2.10.2**

## Part I

612-501-02

UMODPC

612-501-02

**Units frequently deploy for exercises and contingencies by strategic air. While unit equipment generally moves by sealift, soldiers and selected light equipment nearly always deploy by air. In a crisis, strategic air is used almost exclusively during the early phase of the operation to move both soldiers and equipment to the area of operations. This is due to the quick response that strategic air provides for deploying forces. As the operation progresses, sealift begins to arrive in theater with equipment for later deploying units, and the dependence on air for equipment movement decreases. Strategic airlift is a precise business. Plans for loading aircraft must be exact and aircraft take-off and arrival windows are tightly controlled. Inadequate preparation by the unit can delay aircraft departure and impact force closure timelines established by the supported commander. As the UMO, it is almost certain that you and your unit will be involved in airlift operations for exercises or contingencies. To adequately perform your UMO responsibilities, you must be knowledgeable in unit responsibilities and established procedures for planning and executing deployments by strategic air.**

**This lesson will be presented in two parts. In the first part we will discuss organizational responsibilities for strategic airlift, unit responsibilities for preparing soldiers and equipment for airlift operations, the process for developing aircraft load plans, and unit processing through an APOE. In the second part of the lesson we will discuss military and commercial aircraft used to provide strategic airlift, how to determine equipment center of balance, and how to build 463L pallets in preparation for airlift operations.**



## Aerial Movement



**UMOD 2.10.2.1.**

- Most units will ship their equipment & supplies via ocean vessels to SPOD & airlift unit personnel to an APOD
- Selected units (airborne, light forces) plan for deploying both equipment & personnel by airlift.

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612-501-02

**For deployment operations involving large numbers of forces, deploying units normally ship their equipment and supplies via sea transportation to overseas areas of operations. Unit personnel then fly to an aerial port of debarkation (APOD) and marry up with their equipment at the seaport of debarkation (SPOD) or at designated staging bases. This scenario is particularly applicable to heavy forces, such as engineer, armor or mechanized infantry units. Other units, such as airborne and light forces, are prepared to deploy both soldiers and equipment primarily by strategic air. Regardless of unit type, all units with a mission that requires deployment by strategic air maintain air movement plans and personnel trained and certified in air load planning.**





## Deployment Authority



UMOD 2.10.2.2

- The decision to deploy military forces originates with the NCA
- The CJCS issues the deployment order
- Deployment order addressed to appropriate Unified Commands and the Services

UMODPC

612-501-02

**Recall from an earlier lesson that the decision to deploy military forces for contingency operations originates solely with the National Command Authority (NCA). Based on an NCA decision to deploy forces and authorization from the Secretary of Defense, the Chairman of the Joint Chiefs of Staff (CJCS) issues a deployment order. The deployment order could also be included as a part of warning orders and alert orders. Deployment orders issued by the CJCS are addressed to the appropriate Unified commands and to the Services.**



## USTRANSCOM



- USTRANSCOM provides global land, sea & air transport to deploy and sustain forces



HQ USTRANSCOM  
Scott AFB, IL



UMODPC

612-501-02

### UMOD 2.10.2.3


**USTRANSCOM has the mission to provide global land, sea, and air transportation to deploy and sustain forces. It performs this mission through its three transportation component commands; Air Mobility Command (AMC), Military Sealift Command (MSC) and Military Traffic Management Command (MTMC).**

**NOTE: MTMC has become Surface Deployment Distribution Command (SDDC) - same function building) - new name**







## Air Mobility Command (AMC)



- AMC is USTRANSCOM component command that provides strategic airlift
  - AMC uses organic and commercial airlift assets
  - AMC's Tanker Airlift Control Element (TALCE) coordinates loading & off-loading operations at aerial ports

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612-601-02

**USTRANSCOM provides airlift support through the Air Mobility Command. AMC provides airlift assets from its organic fleet of military aircraft, through contracted airlift, and from commercial passenger and cargo aircraft of the Civilian Reserve Air Fleet (CRAF). The AMC also provides an Air Mobility Squadron or Tanker Airlift Control Element (TALCE) to coordinate all loading, en-route support, and off-loading operations at aerial ports and enroute airfields.**



## Deploying Unit Movement Instructions



UMOD 2.10.2.5

- Deploying unit's higher headquarters issues movement orders/instructions based on CJCS & MACOM deployment orders/directives:
- Guidance may include:
  - Date/times for movement from HS to APOE
  - Equipment to deploy
  - Special logistical & soldier support instructions

UMODPC

612-501-02

Joint Chiefs of

**Staff (JCS), Army Service Component Command (ASCC) or Army MACOM deployment orders and directives, the deploying units higher headquarters issues movement orders or instructions for the deploying unit's movement. These instructions could be part of division, brigade or battalion operations orders. The order normally provides instructions to the deploying unit concerning date/times and mode for movement from unit home station to the APOE. The order may contain a movement or flow table that designates unit arrival and departure times from home station through aircraft departure. Movement instructions to deploying units could also include specific guidance for the type and quantity of equipment to deploy and any special logistics instructions such as days of supply to accompany the unit**





## UMC -- Air Movement Responsibilities



UMOD 2.10.2.6

- UMC
  - Primary installation POC for airlift operations and coordinating airlift requests
  - Maintains coordination with deploying unit, Army MACOM or ASCC, & AMC POC for aircraft departure times and mission changes
  - Coordinates (along with ITO) installation support for movement to and activities at APOE

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612-501-02

**at Coordinator  
of contact**

**for airlift operations. During deployment operations the UMC maintains close coordination with the deploying unit and its higher headquarters, with the Army MACOM or ASCC responsible for deploying the forces, and with the Air Mobility Command point of contact. The UMC (and the ITO) coordinates with AMC and the deploying unit for aircraft loading and departure times. The UMC and the Installation Transportation Officer also coordinate installation support for installation staging area operations (if applicable) and for installation support at the aerial port of embarkation. This includes obtaining any commercial support the deploying unit may need to move equipment or personnel to the APOE. For routine exercises that require airlift support, the UMC is responsible for processing unit airlift requests for ultimate**



## Unit Preparation for Air Movement



**UMOD 2.10.2**



UMODPC

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**To this point in the lesson we discussed deployment orders and USTRANSCOM, AMC, and Unit Movement Coordinator responsibilities for aerial movement. We'll now discuss general unit and UMO responsibilities for preparing soldiers and equipment for air movement.**





## UMO -- General Responsibilities



UMOD 2.10.2.8

- UMO:
  - Coordinates unit airlift planning and preparation activities
  - + Includes coordination with higher headquarters & UMC for unit support & procedures during movement to and processing at APOE.

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612-501-02

**Planning and executing unit air movement operations lies with the unit commander. As the unit movement officer you are the commander's subject matter expert and action officer for carrying out these responsibilities. Your major responsibility is orchestrating unit airlift planning and preparation activities to ensure your unit can efficiently process through the APOE to meet aircraft departure times. To perform this responsibility you will need to coordinate with your higher headquarters and the UMC for required external unit support and APOE processing procedures. Support requirements could include commercial or external military transportation support required to move to the POE, logistics support in aerial port marshaling areas, and arrival/departure airfield control group (A/DACG) support at the APOE. If you have adequately planned for airlift operations prior to deployment notification, many of these activities should be accomplished as a matter of standard operating procedure**



## Unit & UMO Preparation Tasks



- Unit has multiple planning & preparation tasks
- Technical assistance available from higher HQ, installation UMC, A/DACG & TALCE
- Unit tasks include:
  - Prepare/review air movement plan with higher HQ. Plan should detail unit actions and include sequence of movement for troops & equipment.

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612-501-02

**UMOD 2.10.2.9**

**is tasks to perform in preparation for air movement. Sources for assistance can include the unit's higher headquarters, the installation UMC, the A/DACG and the TALCE. What follows is a list of tasks that are generally applicable to both exercise and contingency airlift operations.**

**(1) The first task is to prepare or review the unit's air movement plan (if a plan already exists) with higher headquarters. The air movement plan should include sufficient detail for unit level actions and responsibilities to ensure orderly movement execution. The plan should also address the priority and sequence for movement of deploying unit soldiers and equipment. Coordination with higher headquarters ensures that support requirements are identified and supportable, and that the movement is coordinated with the plans of other**





## Unit & UMO Preparation Tasks (Cont)



### UMOD 2.10.2.9.A

- Establishing unit priorities/sequence for arriving at APOD or area of operations
- Planning movement to POE (convoy, rail, water, commercial truck)
- Preparing movement documentation (vehicle load plans, DEL, HAZMAT)

UMODPC

612-501-02

(2) The deploying unit must establish priorities for sequencing unit arrival at the aerial port of debarkation or into the area of operations. This determines how the unit will sequence its subordinate elements for movement to the APOE. There are two scenarios that must be considered. In scenario one, the unit is executing an aerial move as part of a larger force and aircraft departure and arrival times have already been assigned to the unit. In this case the unit determines the order that subordinate elements need to arrive at the APOD or area of operations, and then plans movement to the POE accordingly. The second scenario involves planning for contingency operations when the unit is deploying independently. Based on when the unit must be in its area of operations and ready to undertake operations (required delivery date), an earliest and latest arrival date is established at the APOD and available to load dates are designated for the APOE. You may recall that these dates are part of the time phased force deployment data. The unit then backwards plans its movement from home station to POE. Again, the unit must determine its internal priorities for unit arrivals at the APOD, and subsequent arrival in the area of operations.

(3) The unit is responsible for planning and executing its movement from home station to the APOE. If the unit is moving by convoy, the UMO prepares and forwards convoy clearances to the UMC. If other movement means such as rail or commercial truck are being used, the UMO coordinates with the UMC for specific movement procedures and times. Rail moves require careful planning and can tax unit resources.

(4) As with moves by any mode, complete and accurate documentation is a must. This includes vehicle load plans using FORSCOM Form 285-R or DD Form 1750, the deployment equipment list, hazardous cargo documentation, and air load plans.



## Unit & UMO Preparation Tasks (Cont)



**UMOD 2.10.2.9.B**

- Determining requirements for 463L pallets and associated pallet top/side nets & plastic covers
- Obtaining BBPCT and aircraft shoring & floor materials
- Preparing & organizing soldiers for air movement
  - Includes designating key personnel, weapons procedures, aircraft safety & manifesting

UMODPC

612-501-02

**(5) For airlift operations, deploying units generally pack duffel bags and loose equipment on Air Force 463L pallets. The Installation Transportation Officer or the Division Transportation Officer is normally the POC for obtaining the pallets and their associated cargo nets, based on unit requirements.**

**(6) Blocking, bracing, packing, crating and tiedown (BBPCT) materials will be required for securing secondary loads in vehicles. Additionally, the unit should obtain shoring and protective items to place under select equipment, such as vehicle tracks, to protect the aircraft floor and distribute the weight of heavy items. FM 55-9 provides specific guidance for using shoring. The Installation Director of Public Works normally provides or coordinates to obtain these items.**

**(7) Preparing and organizing soldiers includes designating unit personnel who will have specific duties for air movement operations, developing individual weapons procedures, manifesting personnel, and providing safety orientations. We will cover these items in more detail later in the lesson.**





## Unit & UMO Preparation Tasks (Cont)



- Preparing equipment & cargo to include 463L pallet & vehicle loads
  - + Configure equipment for air movement
  - + Weigh vehicles and mark center of balance
- Ensuring documentation & load plans are complete.
- Providing load team training (if required)

**UMOD 2.10.2.9.C**

UMODPC

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**(8) Preparing equipment, cargo and pallets includes ensuring equipment is in the correct loading configuration for air movement. Consult TB 55-46-1, the higher headquarters movement officer, or the UMC if there are questions on the correct vehicle configuration. Vehicles and all other equipment that will be loaded in the aircraft must be weighed and the center of balance marked. Weight and center of balance information is critical information for developing aircraft load plans and for physically loading the aircraft. We'll discuss how to determine center of balance in Part II of this lesson.**

**(9) Based on the equipment and personnel the unit is deploying, the unit's air-load planner develops aircraft loads for each airlift mission. Remember from one of our earlier lessons that the only personnel authorized to prepare and sign aircraft load plans are soldiers trained and certified by approved air-load planning courses.**

**(10) Air movements require trained aircraft loading teams. Ideally, these teams should be trained and proficient when the unit is alerted for deployment. If additional or refresher training is required, the UMO should coordinate training with its higher headquarters, the UMC, or the units AMC affiliation unit. It is extremely important to keep loading teams proficient year-round, as there is generally limited time available once the unit is alerted for movement.**



UMOD 2.10.2.10

## Preparing Personnel and Equipment for Air Movement

UMODPC

612-501-02

We'll now discuss unit activities required to prepare unit soldiers and equipment for movement.





## Preparing Personnel for Air Movement



- Identify key unit personnel and assign duties & responsibilities
- Key positions include:
  - Unit liaison to A/DACG
    - + Facilitates communication between unit and A/DACG
    - + Clarifies processing procedures and resolves problems

**UMOD 2.10.2.11**

UMODPC

612-601-02

**Preparing personnel for air movement includes identifying and training (if required) key movement personnel and preparing soldiers for air movement related tasks and procedures. We know from previous lessons that units with deployment missions are required to appoint and maintain personnel in selected movement specific positions. This includes certified air load planners, hazardous material certifying officials, and UMOs. When deployment occurs there are several other key positions and training requirements based on the movement mode or specific movement requirements.**

**Key positions for airlift operations include:**

**(1) A unit representative to serve as liaison to the A/DACG. In some instances the liaison is the UMO or alternate UMO. The liaison clarifies processing procedures with the A/DACG and provides the unit advance notice of any problems, to include recurring problems resulting from the joint equipment inspections. The liaison also resolves problems on-site or coordinates with the parent unit for corrective action.**



## Preparing Personnel for Air Movement (Cont)



UMOD 2.10.2.11

- Key positions (Con't)
  - Planeload or troop commander:
    - + Assumes control of all passengers listed for movement on the flight
    - + Ensures passengers are briefed on aircraft procedures
    - + Ensures necessary support is provided during en route stops

UMODPC

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**(2) A planeload or troop commander is assigned for each aircraft carrying passengers. The troop commander assumes control of all passengers listed for movement on the flight. Responsibilities include ensuring aircraft passengers are briefed and follow in-flight safety procedures as well as procedures for departing the aircraft upon landing. If the aircraft makes en route stops, the troop commander ensures necessary meal or comfort support is provided to soldiers.**





## Preparing Personnel for Air Movement (Cont)



UMOD 2.10.2.11.B

- Key personnel training:
  - Unit vehicle drivers & equipment operators may require training in:
    - + Aircraft loading & off-loading and proper procedures for restraining unit cargo (under aircraft load master supervision)

UMODPC

612-601-02

aining in tasks

**specific to airlift operations.**

**(1) Unit vehicle drivers and equipment operators may need training or orientation briefings on aircraft loading and offloading procedures. As a minimum, drivers and operators must be briefed on procedures and restrictions for approaching the aircraft for loading. Vehicles are loaded onto aircraft and restrained under the supervision of the aircraft load master.**

**Knowledge of hand and arm signals is absolutely essential. The TALCE or A/DACG normally briefs equipment operators on correct procedures for loading their equipment, and escorts the equipment to the flight line. In some cases, vehicle operators may need training in properly securing vehicles in aircraft. This situation normally occurs when designated unit loading teams are not being employed. For drivers/operators needing training or orientation briefings, the UMO coordinates with the units higher headquarters or the UMC to arrange the instruction. When time is short, the UMO should seek assistance from the A/DACG or the TALCE supporting the move.**



## Preparing Personnel for Air Movement (Cont)



UMOD 2.10.2.11.0

- Key personnel training (Con't)
  - Personnel preparing hazardous cargo for air movement require training & certification



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612-601-02

**(2) As we discussed in our hazardous cargo lesson, all units require at least one soldier trained and qualified to certify hazardous cargo for movement. In the case of air movements, a designated soldier must be knowledgeable in TM 38-250 and the IATA Dangerous Goods Regulations.**





## Preparing Personnel for Air Movement (Cont)



UMOD 2.10.2.11.D

- Develop and brief individual weapons & ammunition procedures for airlift ops
  - Reference TM 38-250 for instructions on packing & certification of ammunition
  - Weapons should be "cleared" before boarding aircraft
  - Personnel requiring loaded weapons must be identified to aircraft commander

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612-501-02

**(3) TM 38-250 contains instructions on packing and certifying ammunition for movement. Normally, weapons are "cleared" prior to entering aircraft, and the troop commander collects ammunition from individuals retaining weapons. Some aircraft passengers may require loaded weapons to guard security equipment. Their presence must be make known to the aircraft commander.**



## Preparing Personnel for Air Movement (Cont)



UMOD 2.10.2.11.E

- Brief personnel
  - Briefing should provide a basic understanding of in-flight responsibilities and procedures for disembarking aircraft.
  - Briefing should include identification of key personnel (troop commander, load master)

UMODPC

612-501-02

**(4) All personnel must be briefed prior to boarding aircraft. The briefing should provide a basic understanding of the air move and a clear understanding of individual responsibilities while in flight and for disembarking the aircraft at destination. Key personnel aboard the aircraft (troop commander, load master) and their responsibilities should also be identified to deploying soldiers. We'll now discuss equipment and cargo preparation for air movement.**





## Preparing Equipment & Cargo for Air Movement



**UMOD 2.10.2.12**

- References for equipment preparation include:
  - FM 55-9, *Unit Air Movement Planning*, Appendix B
  - FM 55-65, *Strategic Deployment*, Appendix C
  - FORSCOM/ARNG 55-1, *Unit Movement Planning*, Chapter 5
  - DD Form 2133, Joint Airlift Inspection Record



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**Shown on this slide are several references that provide guidance for preparing vehicles for air movement. We will not cover all equipment preparation requirements in this lesson, so you will need to have access to this reference material. A particularly useful document is the DD Form 2133, Joint Airlift Inspection Record. This is the form that the TALCE uses when conducting the joint inspection of your equipment with the DACG. A detailed explanation of this form to include vehicle inspection standards is in Appendix B to FM 55-9, Unit Air Movement Planning.**



## Preparing Equipment & Cargo for Air Movement (Cont)



UMOD 2.10.2.12

- Preparing equipment & cargo includes:

- Loading pallets & vehicles
- Preparing vehicles
- Weighing & marking vehicles & pallets
- Manifesting
- Preparing aircraft load plans



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**As we mentioned earlier, it is a deploying unit responsibility to ensure equipment and cargo is properly prepared for air movement. Unit vehicles must be properly configured and loaded and pallets must be correctly built. All unit equipment must be weighed and a center of balance determined and marked. 463L pallets must also be weighed. All equipment, pallets and passengers that will move on the aircraft must be documented on the aircraft load plan.**





## Preparing Equipment & Cargo for Air Movement (Cont)



UMOD 2.10.2.12.1

- Preparing equipment & cargo (Cont):
  - Ensuring vehicles & equipment are serviceable
  - Ensuring equipment lifting or tie-down shackles & devices are in position



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612-501-02

**Preparing vehicles and equipment also includes the following activities:**

- (1) Ensure vehicles and equipment are completely serviceable. DD Form 2133 contains airlift equipment serviceability criteria and includes checks for operational engine and braking system, fluid leaks within standards, and a properly secured battery.**
- (2) Ensure that all lifting or tie-down shackles and devices are in position and serviceable.**



## Preparing Equipment & Cargo for Air Movement (Cont)



**UMOD 2.10.2.12.C**

- Vehicles, self-propelled equipment, and engine powered ground equipment will not be transported with fuel tanks more than 1/2 full
  - Self propelled vehicles may be up to 3/4 full for selected deployment (e.g., opposed entry operations) Check with higher hqs & A/DACG
  - Bulk fuel servicing trucks and trailers must be drained or purged

UMODPC

612-601-02

**-propelled**

**equipment, engine-powered ground equipment, and support equipment will not be transported with fuel tanks more than one-half full unless directives state differently. Fuel levels could be up to  $\frac{3}{4}$  full when deploying for immediate operations (i.e., opposed entry). Bulk fuel-servicing trucks and trailers must be drained or purged to remove explosive vapors prior to loading. Water tanks, water trailers, and other vehicles transporting nonflammable liquids are normally airlifted empty. TM 38-250 addresses the shipment of hazardous materials. The UMO should clarify fuel levels with its higher headquarters and the A/DACG or TALCE prior to beginning equipment processing at the airfield. Note: Drained tank means all fuel has been removed. Purged means that the tank has been cleaned.**





## Preparing Equipment & Cargo for Air Movement (Cont)



**UMOD 2.10.2.12.D**

- All Vehicles, equipment and other cargo will be inspected prior to loading aboard aircraft
  - DD Form 2133, *Joint Inspection Airlift Record* used by TALCE.
  - Equipment checked for serviceable engine and brakes, fluid leaks, proper fuel levels, and secured battery

UMODPC

612-501-02

**(4) All vehicles, equipment and other cargo will be inspected prior to loading on an aircraft to ensure compliance with airlift standards for moving equipment. As previously mentioned, the Air Force TALCE will use DD Form 2133 to check your equipment. Vehicles or equipment not meeting standards will be frustrated for movement until the deficiency is corrected.**



## Load Pallets & Vehicles



- Deploying unit ensures pallets & vehicles are properly loaded for air movement:
  - Hazardous cargo must be prepared & loaded IAW TM 38-250 (AFJM 24-204)
  - 463L pallets are built with unit cargo, covered, and then restrained on the pallet using cargo nets

**UMOD 2.10.2.1**

UMODPC

612-501-02

**that pallets  
l for the air**

**move.**

**(1) Hazardous cargo items are prepared in accordance with packing and certification instructions found in TM 38-250, Preparing Hazardous Materials for Military Air Shipments. This joint publication includes provisions for moving virtually any hazardous item.**

**(2) The deploying unit is responsible for securing loose cargo and equipment on Air Force 463L pallets. After the pallet is built, the unit may cover the cargo with plastic to protect pallet contents from weather while it waits for aircraft loading. The unit then secures the cargo to the pallet using 463L pallet cargo nets and cargo straps. 463L pallets are normally built in the unit area. A representative from the ITO office, A/DACG or a supporting unit may be present to inspect the pallet before it is moved to the airfield. This helps preclude problems when pallets are inspected as part of the joint inspection at the APOE. Proper procedures for building 463L pallets are covered in the**





## Load Pallets & Vehicles (Con't)



UMOD 2.10.2.13.A

- Supplies & equipment are loaded on vehicles IAW with unit's vehicle load plans & firmly secured to prevent movement
  - Shifting cargo presents an unsafe condition for aircraft flight
  - Vehicle loads must not exceed rated cross-country capability for the vehicle

UMODPC

612-501-02

**Supplies and equipment loaded on unit vehicles must be in accordance with the vehicle load plan. Secondary loads must be firmly secured to cargo beds. We discussed specific procedures for loading and securing cargo on unit vehicles in an earlier lesson. Shifting cargo presents an unsafe condition for aircraft flight. Additionally, vehicle loads must not exceed the rated cross-country (off-road) capacity for the vehicle. Exceeding the cross-country weight will result in the vehicle being frustrated at the APOE.**



**You'll also recall from our earlier lesson that each unit vehicle transporting cargo requires a properly completed vehicle load card. The vehicle load can be documented on a FORSCOM Form 285-R, Vehicle Load Card; DD Form 1750, Packing List; or DA Form 5748-R, Shipment Unit Packing List and Load Diagram.**





UMOD 2.10.2.15\*

## Aircraft Load Planning

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**In an earlier lesson we identified the requirement for each unit to have a school trained and certified air load planner. This individual normally prepares aircraft load plans and is the only unit soldier that can sign the plan when it is completed. For the next few minutes we'll cover the process for developing aircraft load plans. While you, as UMO, may not prepare the plans, you must be familiar with the process as part of your overall UMO responsibilities. The primary reference for aircraft load planning is DOD 4500.9-R, DTR Part III, Mobility.**

There is no UMOD 2.10.2.14



## Aircraft Load Planning -- General Guidance



- Use DOD 4500.9-R, FM 55-9, & FORSCOM/ARNG 55-1
- General guidance & considerations:
  - Position personnel, equipment and supplies to facilitate off-load
  - + Avoid floor-loaded cargo on aircraft planned for rolling stock

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There are several references for planning aircraft loads. These are DOD 4500.9-R, Defense Transportation Regulation, Part III, Mobility; FM 55-9, Unit Air Movement Planning; FORSCOM/ARNG Reg 55-1, Unit Movement Planning. Deploying units should refer to these publications and coordinate with their higher headquarters for any local guidance. What follows on this and the next set of slides is general guidance and considerations for preparing air load plans.

(1) Positioning of personnel and stowage of equipment and supplies on aircraft can facilitate rapid offloading at destination. Floor loading cargo when vehicles are in the aircraft should be avoided, if possible. Heavy or large floor loaded equipment may require additional time to load and unload, and impede vehicle movement.





## Aircraft Load Planning -- General Guidance (Cont)



**UMOD 2.10.2.16.A**

- Positioning personnel, equipment and supplies (Cont)
  - + Load vehicles facing the exit ramp
  - + Load trailers with their prime mover
  - + Place palletized cargo aft of rolling stock & passengers

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(2) Vehicles are positioned facing the exit ramp which facilitates rapid aircraft discharge. Trailers should always be loaded with their prime movers. Passengers are normally positioned forward in the aircraft with vehicles in the middle and pallets aft.

(3) Note that these are general rules. Maximum aircraft utilization and the need to balance equipment loads frequently determines the positioning of vehicles, pallets and soldiers.



## Aircraft Load Planning -- General Guidance (Cont)



- Plan for the use of C-141 or C-17 aircraft for majority of strategic movement of unit equipment & cargo



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**UMOD 2.10.2.16.1**

(4) When developing aircraft load plans, use the C-141 or C-17 aircraft for strategic movement of equipment, cargo and personnel.





## Aircraft Load Planning -- General Guidance (Cont)



**UMOD 2.10.2.16.C**

- C-5 aircraft are limited assets best used for outsize items



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**(5) C-5 aircraft are limited assets and are used for outsized items. Your unit may have equipment that can only be transported on a C-5. Use TB 55-46-1 to identify items that are limited to the C-5 for strategic airlift.**



## Aircraft Load Planning -- General Guidance (Cont)



**UMOD 2.10.2.16.**

- C-5 aircraft are limited assets best used for outsize items



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(5) C-5 aircraft are limited assets and are used for outsized items. Your unit may have equipment that can only be transported on a C-5. Use TB 55-46-1 to identify items that are limited to the C-5 for strategic airlift.





## Aircraft Load Planning -- General Guidance (Cont)



UMOD 2.10.2.16.E

- Identify a minimum of 2 passengers with each load of equipment or cargo to act as custodians if aircraft should be diverted & cargo down-loaded somewhere other than original destination
  - + Qualified operators should be transported with self-propelled vehicles

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**(7) The unit should plan to have a minimum of two soldiers with each aircraft loaded with unit equipment. These soldiers act as cargo custodians if the aircraft is diverted and cargo downloaded at an area other than the destination. On military aircraft, qualified operators should always be transported with self-propelled vehicles.**



## Aircraft Load Planning -- General Guidance (Cont)



- Refer to TB 55-46-1 *Standard Characteristics for Transportability of Military Vehicles & Other Outsize / Overweight Equipment* for initial equipment configuration & dimensional planning information



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UMOD 2.10.2.10

**(8) When preparing load plans, refer to TB 55-46-1, Standard Characteristics (Dimensions, Weight, and Cube) for Transportability of Military Vehicles and Other Outsize/Overweight Equipment (In TOE Line Item Number Sequence) for equipment configuration and dimensional information. Remember that this information is only used for planning and actual dimensions and weights must be used when preparing final aircraft load plans. TB 55-46-1 is also a quick reference for identifying aircraft that the unit's equipment is certified to be flown on.**

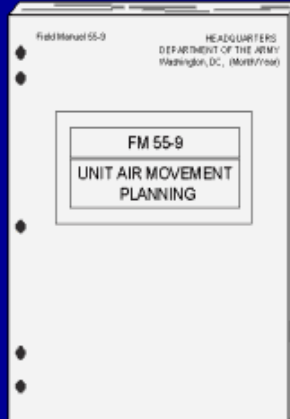




## Aircraft Load Planning -- General Guidance (Cont)



- Reference FM 55-9 to ensure pallet weight, axle loads, wheel loads, tire footprint loads & general floor loads conform to the fuselage zone, compartment & loading limitations for the aircraft



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UMOD 2.10.2.16.C

**(9) FM 55-9, Unit Air Movement Planning, provides guidance for ensuring pallet weight, axle loads, wheel loads, tire footprint loads, and general floor loads conform to the fuselage zone, compartment and loading limitations for the aircraft.**



## Aircraft Load Planning -- Load Shoring



**UMOD 2.10.2.17**

- Unit might have to provide shoring when shipping some vehicles/equipment by air
- General guidance & considerations:
  - Rolling shoring protects aircraft floor when loading equipment
  - Parking shoring protects floor from concentrated loads
  - Sleeper shoring is used under the axle or frame of equipment

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612-501-02

When shipping some vehicles by air you might have to provide various shoring to protect the aircraft. Some of these vehicles and equipment are:

- (1) Tracked vehicles (including those with rubber pads)
- (2) Trailers when detached from prime mover
- (3) Construction equipment

- (4) Vehicles with large pneumatic tires

The types of shoring are Rolling Shoring, Parking shoring, and Sleeper Shoring.

- (1) Rolling Shoring will protect both the load ramp area and the aircraft floor when loading vehicles and equipment into the aircraft.
- (2) Parking shoring is used to spread the load over the floor of an aircraft where the equipment or vehicle is parked.
- (3) Sleeper shoring is primarily used under axles or frames of equipment to spread the load over the aircraft floor.





## Aircraft Load Planning -- Load Shoring (Cont)



UMOD 2.10.2.17.A

- General guidance & considerations (Cont):
  - If shipping tracked vehicles usually must use rolling shoring and parking shoring
  - + Tracked vehicles could deploy with new rubber pads but redeploy with worn pads & need shoring
  - If shipping large pneumatic tired vehicles & equipment, must use sleeper shoring

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(4) Roller and parking shoring are usually both used when loading tracked vehicles. Parking shoring can be the rolling shoring which is left in place after the vehicle or equipment is placed or shoring placed under the tongue of a trailer that is detached from its mover. Many tracked vehicles have rubber feet attached and can be loaded without roller or parking shoring when new. Your unit must provide or arrange for shoring both in deploying and in the redeployment process. The rubber pads on a vehicle may be worn when redeploying so this must be considered when planning.

(5) Sleeper shoring is used to support certain types of equipment such as bulldozer blades and front-end loaders. Sleeper shoring is also used when large pneumatic tired vehicles are air shipped. Any loss of tire pressure in the large tired equipment could result in slack tie-down chains and in an unstable piece of equipment.

Chapter 6 of FM 55-9, has additional information on shoring



## Aircraft Load Plans



**UMOD 2.10.2.18**

- Identify aircraft allowable cabin load. Seek assistance from higher HQ and UMC early in planning to obtain accurate information on aircraft cabin load for specific deployments
- Goal is to develop load plans that support unit mission while maximizing aircraft utilization

UMODPC

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A key load planning consideration is the allowable cabin load (ACL) for the type of aircraft supporting the unit's deployment. The ACL is the maximum cargo weight that can be carried in the aircraft cargo compartment. Planning ACLs for specific aircraft can be found in FM 55-9, Unit Air Movement Planning, and in FM 55-15, Transportation Reference Data.

During actual movement, the aircraft ACL may differ from the one the unit used during planning. When notified for deployment by strategic aircraft, the UMO or the air load planner must immediately coordinate with its higher headquarters, the installation UMC, or the AMC point of contact to determine the ACL that will be used for the movement. Load plans are then prepared or adjusted to conform to this ACL. The goal is to develop load plans that support the unit mission while maximizing aircraft utilization.





## Aircraft Load Plans (Cont)



UMOD 2.10.2.18.A

- Cross-loading of like capabilities helps prevent total loss of capability due to aircraft diversion or delay



**Example:** If all of a deploying unit's communications equipment is loaded on a single aircraft, & that aircraft fails to reach the mission location, the unit's communications capability is severely impacted

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Cross loading of like equipment capabilities on several aircraft in the airflow helps prevent the total loss of the capability if one aircraft should be delayed or diverted. For example, if all the unit's communication equipment is on a single aircraft and that aircraft diverts, unit capability could be severely impacted.



## Manifests



### UMOD 2.10.2.19

- DD Form 2328 takes the data from DD Form 2327 & summarizes it to identify quantities & type of aircraft planned for the air move
- Once loads have been designed for each aircraft, prepare:
  - DD Form 2130 Cargo Manifest
  - DD Form 2131 Passenger Manifest

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Recall that earlier in the lesson we identified DD Form 2327 and DD Form 2328, as a means to document our movement requirement and to estimate the number and type of aircraft required. When USTRANSCOM identifies specific types of aircraft to move the unit, the unit prepares actual cargo and passenger manifests using DD Form 2130 and DD Form 2131.





## Manifests (Cont)



UMOD 2.10.2.19.A

- DD Form 2130  
Cargo Manifest
- Lists all  
cargo  
loaded on  
aircraft

C-141B cargo manifest  
DD Form 2130-3

The DD Form 2130 series lists all cargo aboard the aircraft. This form is completed for each aircraft the unit is using. Seven copies are prepared for a CONUS air movement and fifteen copies for an OCONUS air movement.



## Manifests (Cont)



- DD Form 2131  
Passenger Manifest
  - Lists all personnel  
aboard aircraft

UMOD 2.10.2.19.B

UMODPC

612-501-02

The DD Form 2131 lists the personnel that will be transported by air. Again, prepare 15 copies of DD Form 2131 for OCONUS movements. Additional copies may be required for customs and foreign clearances outside CONUS. Note that our discussion on preparing load planning forms and manifests has focused on manual document preparation. The Automated Air Load Planning System (AALPS) and the Computer Aided Load Manifesting (CALM) system provide an automated means to prepare load plans and manifests. For most deployments your unit's load planner will use these systems. In some cases, such as redeployments from austere areas, these automated systems may not always be available. When this occurs, the unit must have the ability to prepare manual manifests.





UMOD 2.10.2.21\*

## Aerial Port of Embarkation Operations

UMODPC

612-501-02

During this part of the lesson we will discuss the layout for a notional APOE and specific activities for processing a unit through the APOE.

\*There is no UMOD 2.10.2.20

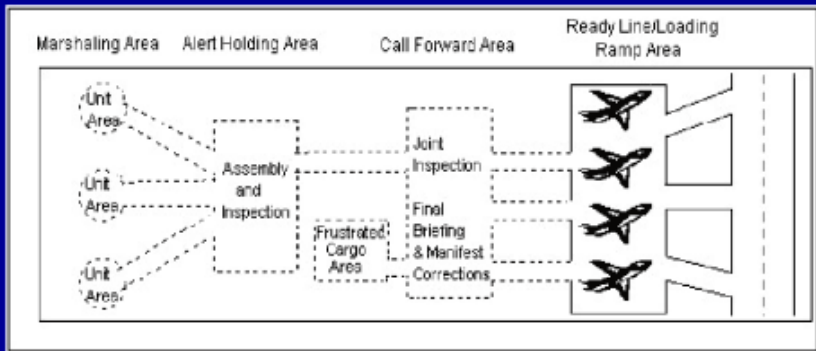


## Notional APOE



- Aerial Port of Embarkation functional areas

**UMOD 2.10.2.22**



UMODPC

612-501-02

Shown on this slide is a notional aerial port of embarkation. Note the APOE is divided into four different areas for processing deploying units. These areas are the unit marshaling area, alert holding area, call forward area and the ready line / loading ramp area. We will briefly discuss each area and the responsibilities of the various organizations operating within the areas.



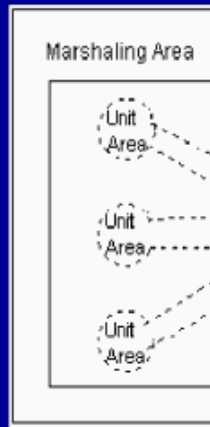


## Notional APOE -- Marshaling Area



UMOD 2.10.2.23

- Marshaling area
- Deploying unit area of responsibility
- Unit conducts final preparations for air movement



UMODPC

612-501-02

Marshaling area activities are the responsibility of the deploying unit commander. The marshaling area may be logistically supported by an installation or by a designated supporting unit. Ideally, marshaling area activities should take place as close as possible to the departure airfield. Within this area the deploying unit makes final preparations for air movement.



## Marshaling Area Responsibilities



**UMOD 2.10.2.**

- Deploying units responsibilities include:
  - Establish liaison with A/DACG
  - Perform preparation of vehicles & equipment
    - Prepare passenger & cargo manifests
    - Assemble personnel, supplies & equipment into plane loads (chalks)
  - Ensure planeload/troop commanders briefed & escorts assigned (if required)

UMODPC

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Deploying unit activities in the marshaling area include:

- (1) Establishing liaison with the A/DACG and TALCE.
- (2) Performing final preparation of vehicles and equipment according to air transport guidelines, to include weighing and marking center of balance.
- (3) Preparing personnel and cargo manifests.
- (4) Assembling personnel, supplies, and equipment into aircraft loads according to established load plans.
- (5) Ensuring planeload or troop commanders are appointed and properly briefed on their responsibilities.
- (6) Providing escorts for sensitive items.





## Marshaling Area Responsibilities (Cont)



UMOD 2.10.2.24.

- A/DACG responsibilities include:
  - Establish liaison with unit & TALCE
  - Coordinate with TALCE for USAF technical assistance for deploying unit
  - Call unit chocks forward to Alert Holding Area

UMODPC

612-501-02

**The A/DACG is responsible for the following actions in support of the deploying unit while the unit is in the marshaling area.**

- (1) Maintaining liaison with the deploying unit and the TALCE.**
- (2) Coordinating with the TALCE for any USAF technical assistance required by the deploying unit. This support could include clarification on procedures for loading vehicles in the aircraft, or for securing unit equipment within the aircraft.**
- (3) Calling aircraft loads forward from the marshaling area and assuming control of the loads in the alert holding area.**

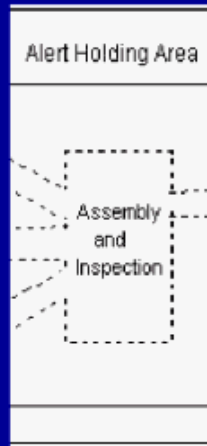


## Notional APOE --Alert Holding Area



**UMOD 2.10.2.25**

- Alert Holding Area
- A/DACG area of responsibility
- Equipment, vehicle and passenger control area
- Equipment & documentation is pre-inspected



UMODPC

612-501-02

The alert holding area is an arrival/departure airfield control group area of responsibility. It is located in the vicinity of the departure airfield and used as a control area for deploying equipment, vehicles and passengers. Control of aircraft loads is transferred from the individual unit to the A/DACG in the alert holding area. Unit equipment and documentation is inspected by the A/DACG in preparation for the joint inspection with the Air Force.





## Alert Holding Area Responsibilities



**UMOD 2.10.2.26**

- Deploying units responsibilities include:
  - Ensure chawks arrive in Alert Holding Area when scheduled
  - Provide A/DACG with passenger/cargo manifests
  - Correct any unit chalk discrepancies
  - Pass control of unit chawks to A/DACG

UMODPC

612-501-02

**After being called forward to the alert holding area, the deploying unit is responsible for:**

- (1) Ensuring that the aircraft load(s) arrives at the alert holding area at the time specified by the A/DACG.**
- (2) Providing the A/DACG with passenger and cargo manifests and required documentation.**
- (3) Correcting load discrepancies identified during pre-inspection.**
- (4) Passing control of unit aircraft loads to the A/DACG.**



## Alert Holding Area Responsibilities (Cont)



- A/DACG responsibilities include:
  - Ensure the unit loads arrive on time
  - Receive & inventory unit chawks
  - Inspect chawks for completeness
- Verify accuracy of weight & center of balance
- Establish a discrepancy correction area

UMODPC

612-501-02

At the alert holding area the A/DACG is responsible for:

- (1) Ensuring unit chawks arrive at the alert holding area on time.
- (2) Receiving, inventorying, and controlling chawks as they arrive at the alert holding area.
- (3) Inspecting aircraft loads to ensure that they are complete and correctly prepared.
- (4) Ensuring required shoring, floor protection materials, and 463L pallet dunnage is available.
- (5) Verifying accuracy of weight and balance markings.
- (6) Establishing a discrepancy correction area.





## Alert Holding Area Responsibilities (Cont)



UMOD 2.10.2.26.B

- A/DACG responsibilities include: (Cont)
  - Inspect documentation for accuracy & completeness
  - Provide limited maintenance, POL & related services as needed
    - Coordinate MHE support
  - Direct chawks to the joint inspection area (call forward area)

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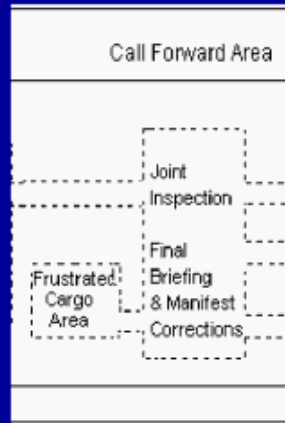
- (7) Inspecting documentation for accuracy and completeness. This includes inspecting hazardous materials/loads for proper documentation.
- (8) Providing emergency maintenance, POL, and related services, as needed, to accomplish the aircraft loading mission.
- (9) Coordinating for required MHE support.
- (10) Directing or guiding the chawks to the joint inspection area (call forward area).



## Notional APOE -- Call Forward Area



- Call Forward Area
  - Dual area of responsibility between A/DACG & TALCE
  - Used for joint inspection of deploying equipment & documentation



UMODPC

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The call forward area is the portion of the departure airfield where the joint inspection (JI) of deploying unit equipment and cargo is conducted by the A/DACG, the deploying unit, and the TALCE. A DD Form 2133, Joint Airlift Inspection Record, is used by the TALCE to inspect the deploying equipment. Upon inspection completion, any noted deficiencies are corrected and the equipment rechecked. The deploying unit then arranges its vehicles (with drivers), pallets, and equipment into the call forward load (chalk) sequence. A final briefing is provided to deploying soldiers and the TALCE reviews all manifests for accuracy.





## Call Forward Area Responsibilities



UMOD 2.10.2.28

- A/DACG responsibilities:
  - Maintain communications with unit & TALCE
  - Ensure unit passenger/cargo manifests are correct
  - Ensure all time tables are met
  - In coordination with deploying unit, ensure all discrepancies identified during joint inspection with TALCE are corrected

UMODPC

612-501-02

Upon notice from the TALCE the A/DACG will move the unit's equipment to the call forward area. The A/DACG responsibilities in the call forward area include:

- (1) Keeping communications open with the TALCE and deploying units.
- (2) Ensuring that passenger/cargo manifests are correct.
- (3) Ensuring that established movement timetables for processing unit passengers and equipment are met.
- (4) In coordination with the deploying unit, ensuring that discrepancies found during the joint inspection are corrected.



## Call Forward Area Responsibilities (Cont)



UMOD 2.10.2.28.

- A/DACG responsibilities: (Cont)
  - Provide load team personnel & support equipment (safety, MHE, pusher vehicle)
  - Ensure load team members properly outfitted
  - Escort unit chinks to ready line & ensure all unit personnel are briefed on flight line safety
  - Provide limited logistics support (defueling, maintenance) for deploying units

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- (5) Maintaining statistical data to account for the current status of all unit personnel and equipment scheduled for air movement.
- (6) Providing loading team personnel and support equipment as required (safety equipment, MHE, pusher vehicle).
- (7) Ensuring load team members are properly outfitted with gloves, goggles, ear protection, and reflective devices.
- (8) Escorting aircraft loads to the ready line and ensuring that all personnel are briefed on flight safety.
- (9) Providing necessary logistical support (fueling and defueling capability, maintenance and other related services) to accomplish the aircraft loading mission.
- (10) Providing passenger holding areas, as required.





## Call Forward Area Responsibilities (Cont)



UMOD 2.10.2.28.B

- TALCE responsibilities include:
  - Coordinate with A/DACG on any changes due to aircraft configuration
  - Conduct joint inspection with unit & A/DACG
    - Provide passenger briefing for on/offload procedures and for flight line safety
    - Provide team chief for aircraft load team
  - Notify A/DACG when to dispatch unit chawks to the loading ramp/ready line area

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In the call forward area the TALCE is responsible for the following:

- (1) Coordinating with the A/DACG on any changes required in unit chawks due to changes in aircraft configuration.
- (2) Conducting the Joint Inspection (JI) together with the DACG and unit representatives.
- (3) Providing a passenger briefing guide for the passengers' representative to brief the troops for on/off load procedures. Briefing vehicle drivers and passengers on flight line safety, driving procedures, smoking rules, and special precautions.
- (4) Providing a team chief for each loading team.
- (5) Notifying the A/DACG when to dispatch chawks to the loading ramp/ready line area.

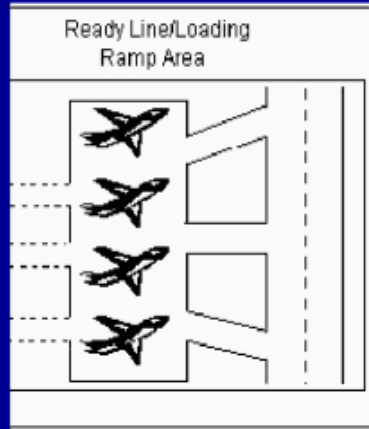


## Notional APOE -- Ready Line/Loading Ramp



**UMOD 2.10.2.29**

- Ready Line/ Loading Ramp Area
  - TALCE area of responsibility
  - TALCE controls all passengers/cargo & stages chucks for aircraft loading



UMODPC

612-501-02

The loading ramp area, including the ready line area, is controlled by the TALCE. The TALCE controls all passenger and cargo movement within this area, and is responsible for loading of passengers and equipment onto the aircraft.





## Ready Line / Loading Ramp Responsibilities



**UMOD 2.10.2.30**

- Planeload or Troop Commander responsibilities
  - Controls aircraft passengers
  - Retains copy of final passenger/cargo manifest
  - Provide unit assistance, as required, to assist load master in securing vehicles
  - Ensures vehicle drivers follow loadmaster instructions for loading equipment

UMODPC

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At the ready line/loading ramp area the deploying unit planeload commander or troop commander is responsible for:

- (1) Monitoring and controlling aircraft passengers.
- (2) Retaining one copy of the final passenger/cargo manifest.
- (3) Providing assistance in loading and securing the aircraft load as requested by the load team chief.
- (4) Ensuring that vehicle drivers and equipment operators follow load team chief or loadmaster instructions when loading equipment on the aircraft.



## Ready Line / Loading Ramp Responsibilities (Cont)



UMOD 2.10.2.30.A

- A/DACG responsibilities
  - Transfers control of aircraft loads to the TALCE
  - Provides load teams to assist in loading aircraft
  - Maintains coordination with the deploying unit representative and the TALCE

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At the ready line/loading ramp area the A/DACG is responsible for:

(1) Transferring control of the aircraft load to the TALCE.

(2) Providing load teams to assist in loading and securing aircraft loads.

Maintaining coordination with the deploying unit representative and the TALCE.





## Ready Line / Loading Ramp Responsibilities (Cont)



UMOD 2.10.2.30.E

- TALCE responsibilities:
  - Accept chucks from A/DACG & load aircraft
  - Ensure each chuck is positioned to its aircraft
  - Ensure all drivers briefed on flight line safety
  - Maintain liaison with Air crew and A/DACG
  - Maintain communications with unit & A/DACG

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612-501-02

The TALCE is responsible for:

- (1) Accepting chucks from the A/DACG at the ready line and loading them aboard aircraft.
- (2) Ensuring that each aircraft load is positioned at the proper aircraft at the specified time.
- (3) Ensuring that all drivers have been briefed on flight line safety.
- (4) Maintaining liaison with the aircraft crew and the A/DACG.
- (5) Maintaining communications with the A/DACG and deploying units.



## Ready Line / Loading Ramp Responsibilities (Cont)



UMOD 2.10.2.30 C

- TALCE responsibilities (Cont):
  - Coordinate with aircraft primary loadmaster & ensure loads are placed aboard aircraft on time
    - Provide & operate MHE, if required
    - Escort passengers to aircraft
  - Provide primary loadmaster with required copies of passenger/cargo manifests

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612-501-02

- (6) Coordinating with the aircraft primary loadmaster and ensuring that loads are placed aboard the aircraft in time to meet the scheduled departure time.
- (7) Providing (if required) and operating MHE and special loading equipment.
- (8) Escorting passengers to the aircraft.
- (9) Providing aircraft primary loadmaster with required copies of the passenger/cargo manifests and retaining a copy for TALCE files.





UMODPC



## UMOD 2.10.3

### Airlift Operations Part II

612-502-03

UMODPC

612-502-03

During this part of the airlift operations lesson we will discuss the military and commercial aircraft used for strategic deployment, how to prepare 463L pallets, and procedures for determining equipment center of balance. While you may not personally build pallets or determine centers of balance, you must be knowledgeable in these procedures to ensure unit personnel correctly perform the tasks. In part one of this lesson we discussed organizational responsibilities for strategic airlift, unit responsibilities for preparing soldiers and equipment for airlift operations, the process for developing aircraft load plans, and unit processing through the APOE. During this lesson we will identify capabilities of military and commercial aircraft used by the Air Force to provide strategic airlift. We will then discuss the 463L pallet system and pallet building techniques. Finally, we will walk through the computations for determining the center of balance for unit equipment.



UMOD 2.10.3.1

## Military and CRAF Airlift Aircraft

UMODPC

612-502-03

The Air Force operates cargo aircraft to provide strategic airlift to deploying forces around the world. During this part of the lesson we will discuss the various aircraft that could be used to support your unit's deployment by strategic air.





## C-130 "Hercules"



**UMOD 2.10.3.1.1**

- Primary Function: Tactical and intra-theater airlift.
- Length: 97 feet, 9 inches
- Height: 38 feet, 3 in  
Wingspan: 132 feet
- Maximum Takeoff Weight: 155,000 pounds  
Range: 2,356 miles with maximum payload;  
5,200 miles with no cargo



UMODPC

612-502-03

The first aircraft we will discuss is the C-130. This aircraft is not considered a strategic asset, however it is routinely used within a theater of operations to move soldiers and equipment. It is the primary aircraft used by AMC for tactical airlift. The C-130 series Lockheed aircraft is a high-winged, turbo-prop airplane designed for tactical/intra-theater type missions. The C-130 characteristics are:

- (1) Length: 97 feet, 9 inches
- (2) Height: 38 feet, 3 inches
- (3) Wingspan: 132 feet, 7 inches
- (4) Maximum takeoff weight: 155,000 pounds
- (5) Range: 2,356 miles loaded & ,5200 miles unloaded



## C-130 "Hercules" (Cont)



UMOD 2.10.3.1.1.A

- Cargo Compartment:  
Length, 41 feet;  
Width, 108 inches;  
Height, 9 feet.
- Rear ramp (one pallet position); length, 88 inches; width, 108 inches; height, 76 inches



UMODPC

612-502-03

Shown on this slide is the cargo compartment, which has a length of 41 feet, a width of 108 inches, and a height of 9 feet.

The rear ramp length is 88 inches with a width of 108 inches and a height of 76 inches.

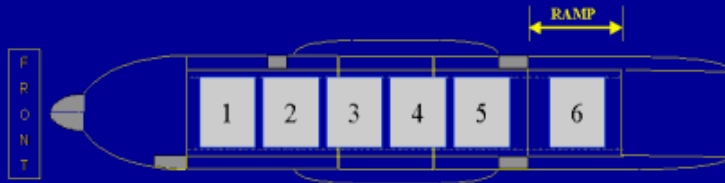




## C-130 "Hercules" (Cont)



UMOD 2.10.3.1.1.B

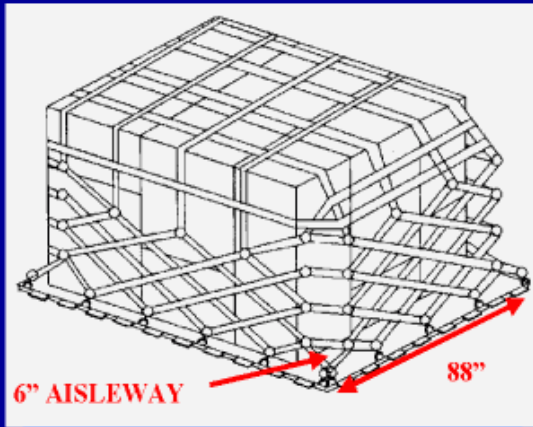


**C-130 PALLET POSITIONS**

The C-130 has six pallet positions.  
Note the number 6 pallet is on the  
aircraft ramp.



## C-130 "Hercules" (Cont)



C-130 PALLET POSITIONS 3 & 4

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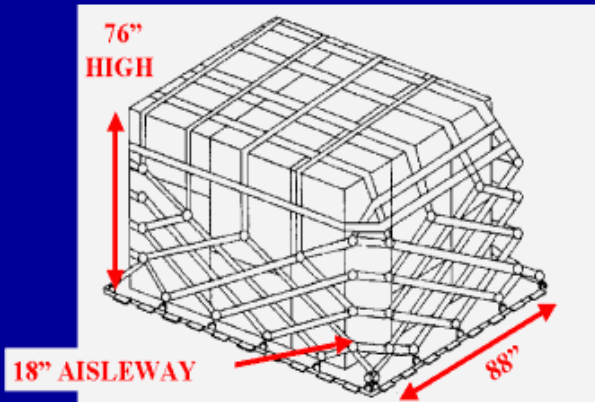
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This slide shows a 463L pallet that will be placed in the third or fourth pallet position. When you build pallets for these positions there must be six inches of space between the cargo and the pallet edge on the pallet side (88 inch side) that is adjacent to the next pallet. When the third and fourth pallets are built with this space and are placed next to each other, it creates an aisle for movement between the pallets.





## C-130 "Hercules" (Cont)



C-130 RAMP PALLET POSITION #6

UMODPC

612-502-03

This slide shows a 463L pallet and the aisle way you will need to leave when the pallet is in the 6th position. Note the height restriction of 76 inches for pallets placed on the ramp.



## C-130 "Hercules" (Cont)



UMOD 2.10.3.1.1.E



- Crew: Five (two pilots, a navigator, flight engineer and loadmaster); transports up to 92 troops, 64 paratroops, 74 litter patients, or six standard freight pallets. Maximum cargo capacity is 45,000 pounds

UMODPC

612-502-03

The C-130 has a crew of five consisting of two pilots, a navigator, a flight engineer and a loadmaster. The aircraft can carry 92 troops, 64 paratroopers, 74 litter patients, or six standard freight pallets. Its cargo capacity is 45,000 pounds.





## C-141B "Starlifter"



**UMOD 2.10.3.1.2**



**C-141B - PRIMARY MISSION IS  
INTERTHEATER AIRLIFT**

UMODPC

612-502-03

**The C-141 series aircraft by Lockheed - Martin is a high-swept-wing, turbo-fan-jet airplane designed for strategic, intertheater missions.**



## C-141B "Starlifter" (Cont)



- Primary Function: Cargo and troop transport
- Wingspan: 160 feet
- Length: 168 feet, 4 inches  
Height: 39 feet, 3 inches
- Range: Unlimited with in-flight refueling
- Maximum Takeoff Weight: 323,100 lbs



UMODPC

612-502-03

The C-141 is one of two primary aircraft used for strategic deployment of soldiers and cargo.

Aircraft characteristics include:

- (1) Wingspan of 160 feet.
- (2) Length of 168 feet, 4 inches and height of 39 feet, 3 inches.
- (3) The range is unlimited with in flight refueling.
- (4) Maximum takeoff weight is 323,100 lbs.





## C-141B "Starlifter" (Cont)



**UMOD 2.10.3.1.2.**

- Load:
  - Either 200 troops,
  - 155 paratroops,
  - 103 litters and 14 seats, or
  - 68,725 lbs of cargo



UMODPC

612-602-03

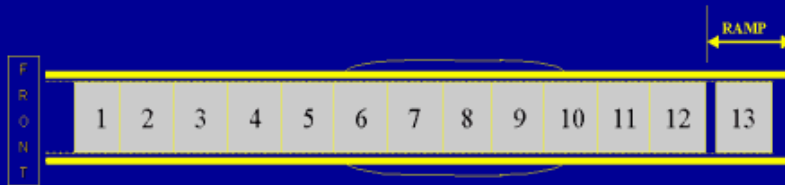
The C141 has a capability to transport 200 soldiers, 155 paratroopers, and 103 litters with 14 seats available. The aircraft's maximum cargo capacity is 68,724 pounds.



## C-141B "Starlifter" (Cont)



UMOD 2.10.3.1.2



### C-141B PALLET POSITIONS

- Cargo Compartment: Height, 9 feet 1 inch; length, 93 feet 4 inches; width, 10 feet 3 inches.  
Cargo Door: Width, 10.25 feet; Height, 9.08 feet

UMODPC

612-502-03

This slide shows the 13 pallet positions available in the aircraft. The cargo compartment height is 9 feet 1 inch; length, 93 feet 4 inches; and width, 10 feet 3 inches. The cargo door is 10.25 feet wide with a height of 9.08 feet





## C-141B "Starlifter" (Cont)



**UMOD 2.10.3.1.2**



- Crew of five: two pilots, two flight engineers and one loadmaster (one navigator added for airdrops). Aeromedical: two flight nurses and three medical technicians

UMODPC

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The C-141 has a crew of five which includes two pilots, two flight engineers and one load master. A navigator is added to the crew when the aircraft is performing airdrops. For aeromedical missions, two flight nurses and three medical technicians join the crew.



## C-17 "Globemaster III"



**UMOD 2.10.3.1.3**

- Primary Function: Cargo and troop transport
- Wingspan: 169 feet 10 inches (to winglet tips)
- Length: 174 feet
- Height: 55 feet 1 inch
- Range: Global with in-flight refueling. Maximum peacetime takeoff weight: 585,000 pounds



UMODPC

612-602-03

The C-17 is the second primary aircraft used for strategic airlift of cargo and soldiers. Aircraft characteristics are:

- (1) Wingspan: 169 feet 10 inches (to winglet tips)
- (2) Length: 174 feet
- (3) Height: 55 feet 1 inch
- (4) Range: Global with in flight refueling
- (5) Maximum takeoff weight: 585,000 pounds





## C-17 "Globemaster III" (Cont)



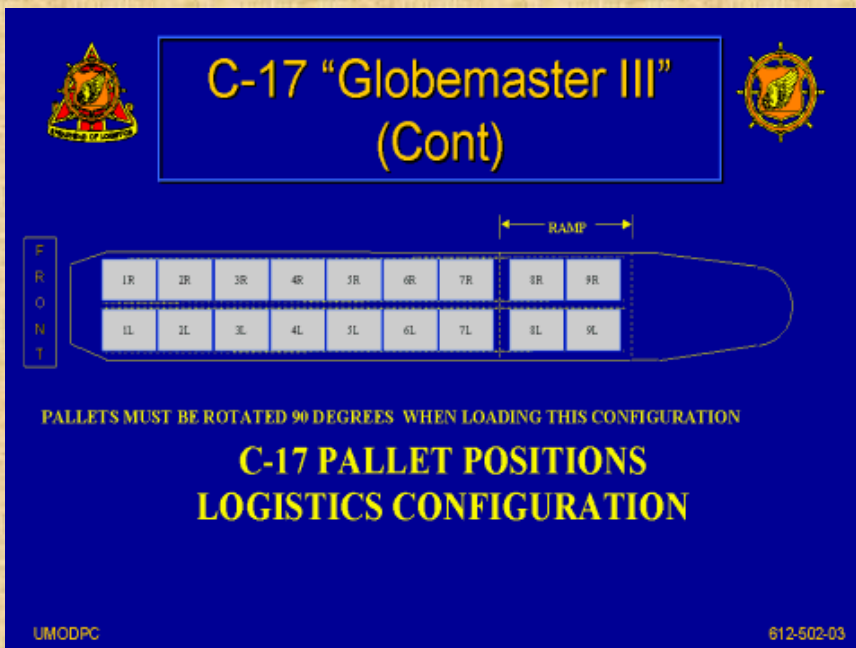
- Cargo Compartment:
- Length: 88 feet
- Width: 18 feet
- Height: 12 feet, 4 inches
- Cargo Load: 170,900 pounds of cargo (18 pallet positions)



UMODPC

612-502-03

Cargo Compartment: Length, 88 feet; width, 18 feet; height, 12 feet 4 inches  
Cargo Load: 170,900 pounds (18 pallet positions)

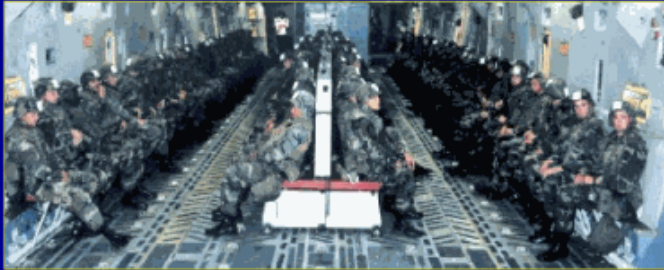


This slide shows the 18 pallet positions that are available aboard this aircraft.





## C-17 "Globemaster III" (Cont)



- Crew: Three (two pilots and one loadmaster)
- Load: 102 troops/paratroops; 48 litter and 54 ambulatory patients and attendants

UMODPC

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The C-17 has a crew of three consisting of two pilots and a loadmaster. It can carry a load of 102 troops or paratroopers, 48 litters, and 54 ambulatory patients and attendants.



## C-17 "Globemaster III" (Cont)



UMODPC

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The C-17 is replacing the C-141 as the Air Force's primary aircraft for strategic airlift. This slide shows a typical C-17 aircraft load.





## C-5 "Galaxy"



- Primary function: Outsized cargo transport
- Wingspan: 222.9 feet, Length: 247.1 feet, Height: 65.1 feet
- Range:  
4,400 miles (loaded)  
11,500 miles (unloaded)



UMODPC

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We will now move on to the Lockheed-Martin manufactured C-5. This aircraft is a high swept-wing, turbo-fan-jet aircraft. Its primary mission is strategic airlift of cargo or equipment that is outsized or oversized.

(1) The aircraft's wingspan is 222.9 feet, its length 247.1 feet, and it is 65.1 feet high at the tail.

(2) Its un-refueled range is 4,400 miles loaded and 10,500 unloaded.



## C-5 "Galaxy" (Cont)



UMOD 2.10.3.1.4.A

- Special ability to lower front or rear of aircraft for loading.
- Crew: 7 (pilot, co-pilot, two flight engineers and three loadmasters)



Forward kneeling

UMODPC

612-602-03

A special feature of the C-5 is its ability to load and unload from either end of the cargo compartment and its capability to 'kneel.' This is the ability to lower either end of the aircraft to facilitate loading and unloading.

A crew of seven consisting of a pilot, co-pilot, two flight engineers and three loadmasters operates the aircraft.





## C-5 "Galaxy" (Cont)



- Cargo compartment:  
Height: 13.5 ft  
Width: 19 ft  
Length: 143 ft, 9 inches
- Maximum cargo capacity:  
170,000 lbs



UMODPC

612-502-03

This slide shows a C-5 with both ramps open. The large cargo compartment has a height of 13.5 feet, width of 19 feet and its length is 143 feet, 9 inches. The C-5s maximum cargo weight is 170,000 pounds.



## C-5 "Galaxy" (Cont)



UMOD 2.10.3.1.4.

### C-5 Pallet Positions - 36



C-5 Pallet positions 1 & 2  
- Fwd ramp

C-5 Pallet positions 35 & 36  
- Aft ramp

UMODPC

612-602-03

**This is a pallet position diagram of the C-5 showing all 36 pallet positions. Note that pallets can be placed on both the forward and aft ramp.**

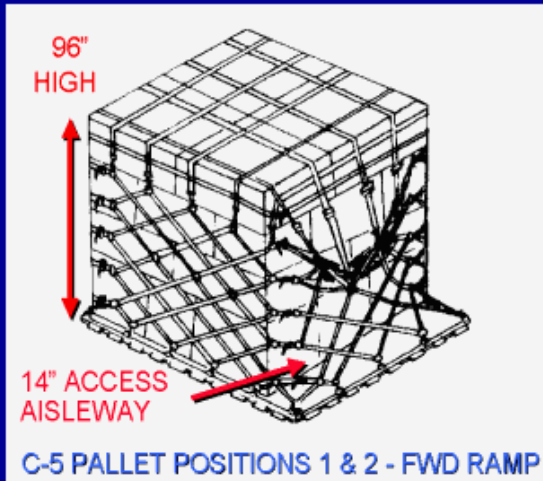




## C-5 "Galaxy" (Cont)



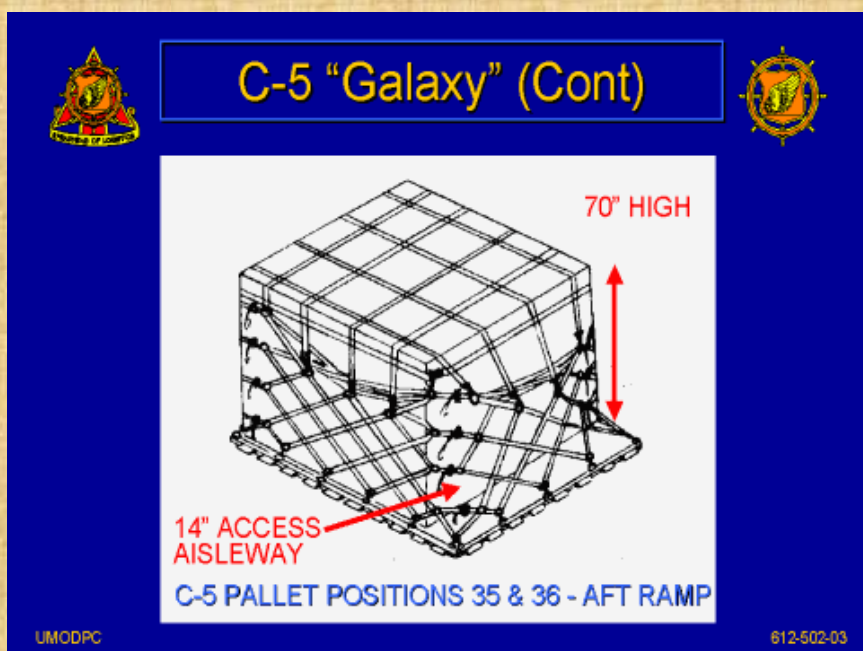
UMOD 2.10.3.1.4.D



UMODPC

612-602-03

**This slide shows the special considerations for placing pallets in the one and two positions on the forward ramp. The pallets for these positions must be built with a 14-inch access aisle.**



**This slide shows the rear two pallet positions and their limitations. These pallets have a 70 inch height limitation and also require a 14 inch access aisle.**





## C-5 "Galaxy" (Cont)



UMOD 2.10.3.1.4.F



UMODPC

612-602-03

**This last slide shows the upper level passenger compartment located in the back of the aircraft behind the wings. There is room for approximately 70 troops above the cargo compartment.**



## KC-10A "Extender"



UMOD 2.10.3.1.5

- Primary Function: Aerial tanker and transport
- Length: 181 feet, 7 inches  
Height: 58 feet, 1 inch
- Wingspan: 165 feet, 4.5 inches
- Maximum Takeoff Weight: 590,000 pounds
- Range: 4,400 miles (3,800 nautical miles) with cargo



UMODPC

612-602-03

**The KC-10A series aircraft is a swept-wing tri-jet designed to air-refuel military airplanes and airlift cargo and support personnel. In addition to being equipped to air refuel military aircraft, the KC-10A can be refueled from another KC-10A or KC-135 tanker. Aircraft characteristics include:**

- (1) Length of 181 feet, 7 inches; height of 58 feet, 1 inch; and a wingspan of 165 feet, 4.5 inches.**
- (2) Maximum takeoff weight of 590,000 pounds.**
- (3) Range of 4,400 miles with cargo and 11,500 miles without cargo.**





## KC-10A "Extender" (Cont)



- Maximum Cargo Payload: 170,000 pounds
- Pallet Positions: 25
- Crew: Four (aircraft commander, pilot, flight engineer and boom operator)




UMODPC


612-502-03

**The maximum cargo payload is 170,000 pounds and the aircraft has 25 pallet positions.**

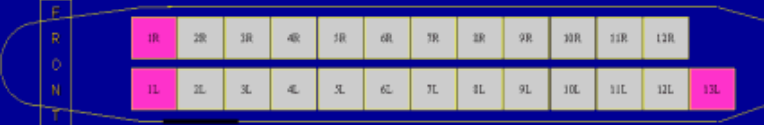
**A crew of four consisting of the aircraft commander, pilot, flight engineer and boom operator mans the KC-10.**



## KC-10A "Extender" (Cont)



### KC-10 PALLET POSITIONS



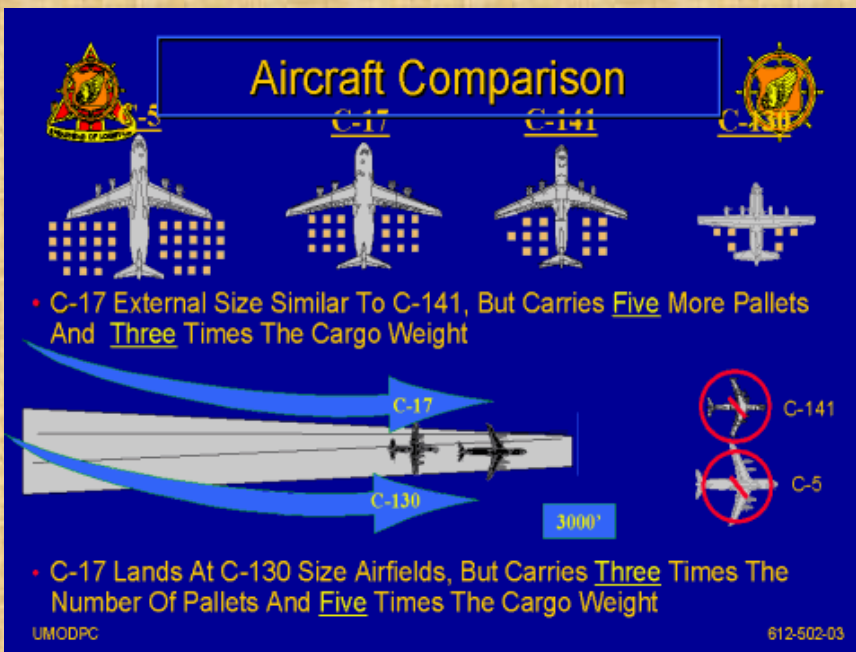
CARGO DOOR

- NOTE: Positions 1L & 1R are normally not used (seats installed) Pallet position 13L is not offered for cargo
- Pallets must be rotated 90 degrees to be loaded

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612-502-03

**The KC-10A can carry up to 25 pallets, but passenger seats usually replace the first two pallet positions. Pallet position 13L is not normally used for cargo.**





This slide shows the different cargo capacities of the aircraft we just discussed. Note that the C-17 is similar in size to the C-141 but carries 5 more pallets. The C-17 can also land in about the same distance as the C-130, but carries three times the pallets and 5 times the cargo weight.

No other strategic airlifter in history has the ground maneuverability of the C-17.

The C-17 combines a set of interrelated technologies and design criteria to increase capability that includes: Aircraft size, propulsive lift, and ground maneuverability. Approaches runways at slower air speeds and steeper glide paths than other airlifters.

Can land at airfields 90 ft wide and 3,000 ft long.

During a recent test it landed in less than 3,000 ft with over 167,000 lbs of cargo on board.

Thrust reversers are designed to permit routine backing. During the C-17 readiness review at Barstow-Daggett Airfield in California, four C-17s were parked in the same ramp as a single C-5 or commercial widebody aircraft. C-17 can direct deliver more cargo in a given period than any other airlifter lessening the probability of MOG (ground constraints) saturation at a given airfield. During Rwanda operations, AMC and U.N. aircraft were forced to circle the airport because of limited ramp space.



## Civil Reserve Air Fleet (CRAF)



UMODPC

612-502-03

**We will now discuss the Civil Reserve Air Fleet (CRAF), which is designed to supplement the military's organic strategic airlift capability.**





## CRAF (Cont)



- CRAF is a voluntary contractual program designed to augment US military airlift forces with civil air carriers to support national defense emergency airlift requirements.



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**CRAF is a separate program from the commercial contract carriers that currently move most of our passenger traffic through AMC's normal system. CRAF is a voluntary contractual program that is designed to supplement our strategic airlift capabilities with civilian aircraft during a crisis. This augmentation includes both cargo and passenger aircraft. The military leases the civil aircraft with crews during crises operations. The CRAF capability was first activated during Desert Shield in August of 1990.**

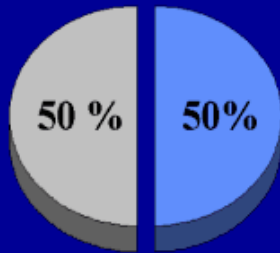


## CRAF (Cont)

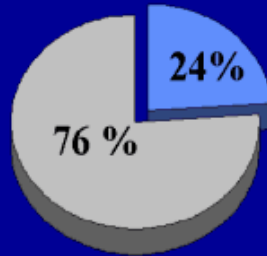


UMOD 2.10.3.1.7

Strategic Capability



Cargo Lift Capability



■ ORGANIC AIRLIFT  
■ COMMERCIAL AIRLIFT

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**CRAF can provide 50% of AMC's total strategic airlift capability, and 24% of its total cargo lift capability. This is using all the committed civilian aircraft such as the B-747 freighters and other cargo aircraft. As you can see, CRAF is a critical capability that can augment our organic airlift capability.**





## CRAF (Cont)



UMOD 2.10.3.1.7

Passenger  
Lift Capability



Aeromedical Evac  
Lift Capability



■ ORGANIC AIRLIFT  
■ COMMERCIAL AIRLIFT

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**In time of crisis, CRAF will carry almost 95% of the passenger airlift requirements. This is utilizing all the civilian carriers who have committed their passenger aircraft. DOD has provided funding to several civilian carriers to convert their aircraft to aeromedical evacuation airlift. We will rely on almost 100% of these converted CRAF aircraft for our medical transport in contingency operations or war.**



## CRAF (Cont)



UMOD 2.10.3.1.7

### CRAF OPERATIONAL STAGES

- ✈ STAGE I - Committed expansion to 77 aircraft
- ✈ STAGE II - Airlift Emergency - additional 182
- ✈ STAGE III - Military Emergencies up to an additional 544 aircraft available

*NOTE: DOES NOT HAVE TO BE ACTIVATED IN STAGE ORDER*

CRAF aircraft totals change quarterly. Approximately 800+ aircraft available (1st Qtr FY 01)

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**CRAF support is divided into three stages. The first stage will utilize up to 77 aircraft under the 1st Qtr FY 2001, agreements. If stage two is activated an additional 182 aircraft can be called to service. This brings the total aircraft available to 259. Under CRAF stage three the remaining 544 aircraft become available for use. The total aircraft available under the 1st quarter FY 2001 agreement is 803. The number of aircraft available by stage can change quarterly.**





## CRAF (Cont)



UMOD 2.10.3.1.7

- CRAF Operational Segments
  - International segment:
    - + Short range section
    - + Long range section
  - Aeromedical segment
  - National segment:
    - + Domestic & Alaska sections

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ee segments of operation. The first is the international segment. This is broken down into two parts; short range and long range. In the long-range section, the airlines commit to providing aircraft that can fly transcontinental distances. These aircraft include the B747, MD-10, and extended range A300 aircraft. The short-range section consists of aircraft such as the B737 and the MD-80 series.

The aero medical evacuation segment is made up of B-767 aircraft that have been altered to quickly remove the interior airline seating sections. These seats are then replaced with litters for transporting patients. Currently, three airlines are participating in the aero medical evacuation segment. These airlines provide over 50 aircraft in stages two and three.

The last segment is the National segment. It includes domestic US and Alaska sections. These aircraft are primarily used inside the United States and Alaska to move passengers



## UMOD 2.10.3.2

### 463L Pallet System

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612-602-03

**In this part of our lesson we will discuss the 463L pallet system and how it is used to transport unit cargo. We will also discuss pallet building and documentation requirements.**





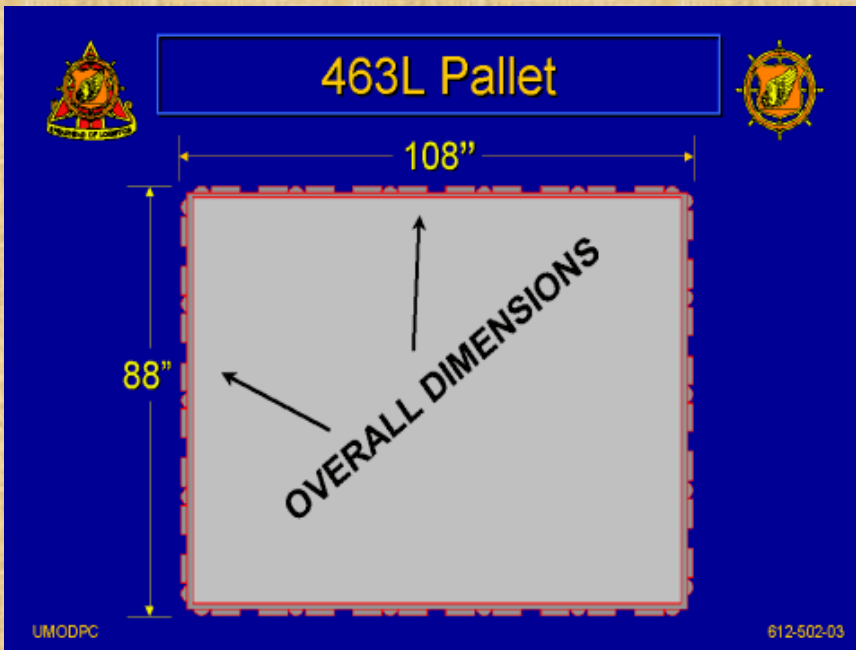
## 463L Pallet System



**UMOD 2.10.3.2.1**

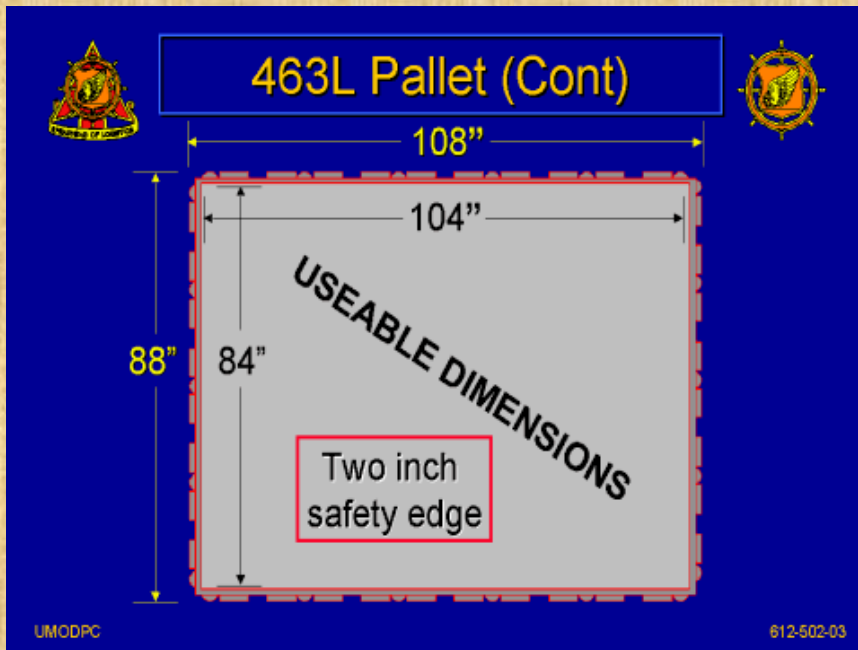
- Proper restraint of cargo is important in an air movement due to the possibility of cargo shifting during flight.
- The 463L pallet system provides deploying units with the ability to consolidate loose cargo and efficiently move it on strategic airlift

**Proper restraint of cargo is important in air movement due to the possibility of cargo shifting during flight. The 463L pallet system was designed to provide deploying units with the ability to consolidate cargo and efficiently move it through the military air transportation system.**



**The overall dimensions of the 463L pallet are 108 inches in length and 88 inches in width. The pallet is a little over two inches in thickness.**





UMOD 2.10.3.2.2

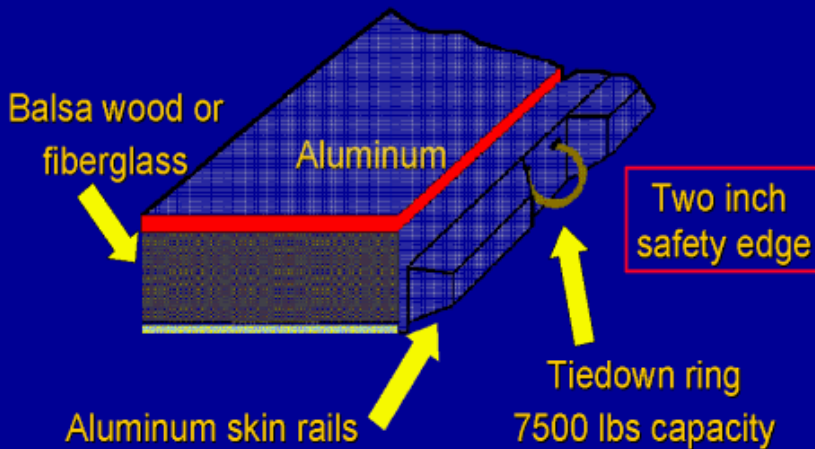
**The usable space on a 463L pallet is 104" long and 84" wide. There is a 2" safety edge around the pallet. Cargo cannot be placed on the edge.**



## 463L Pallet Construction



**UMOD 2.10.3.2.3**



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**The pallet has a core of fiberglass or balsa wood with an aluminum skin over the top. The 2" safety edge contains the aluminum skin rails for locking the pallet in the aircraft and has attached tie down rings. These rings have a holding capacity of 7500 pounds each.**





## 463L Pallet Serviceability



### UMOD 2.10.3.2.4

- Inspect pallets for serviceability prior to use
  - Check both pallet sides for fractures or warping
  - Tie-down rings must move freely
  - Excessive corrosion makes pallet unserviceable
  - Check for cleanliness. Pallet must meet agricultural standards.

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**When using 463L pallets to transport unit cargo, the first step is to check pallet serviceability. This inspection should be accomplished in a well lighted area. Both sides of the pallet must be checked.**

**(1) Inspect the pallet for damage including separation of the aluminum skin, broken skin-to-rail bond, skin fractures or punctures, bent rails, and warpage or bending. Minor dents, gouges, and scratches are acceptable.**

**(2) Check that tie-down rings move freely and are not damaged, cracked, or missing.**

**(3) Inspect for corrosion. Corrosion weakens the pallet. Corrosion in aluminum is indicated by white powdery residue accompanied by flaking or pitting of the metal. Minor surface corrosion is acceptable. Excessive corrosion makes the pallet unserviceable.**

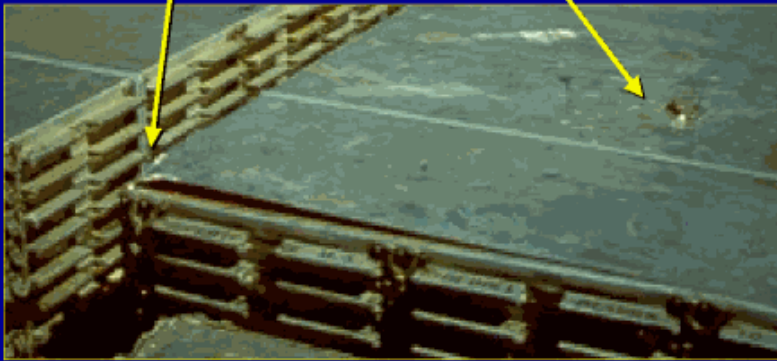
**(4) Pallet cleanliness protects the cargo and prevents the spread of dirt borne insects and disease. The pallet must be clean to pass agricultural and customs inspections.**



## 463L Pallet Serviceability (Cont)



- Pallet damage
- Cleanliness



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**UMOD 2.10.3.2.4.A**

**This slide show a picture of a damaged pallet. Note the corner and the trash located near the center.**





## 463L Pallet Nets



UMOD 2.10.3.2.1

- There are three nets to a set of 463L pallets nets. The set consists of one top net colored yellow, and two side nets colored green or black.



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**463L pallets use a three net set. The set consists of one top net colored yellow and two side nets colored green or black. A complete set when properly attached to a 463L pallet provides adequate restraint for a maximum load of 10,000 pounds. The nets consist of fabric bands, O-rings, tension adjusters, and hooks**



## 463L Pallet -- Net Serviceability



**UMOD 2.10.3.2.1**

- After spreading the net on a dry clean surface, inspect the bands and straps for tears and fraying. Check for:
  - Loose or broken stitches
  - Broken/missing O-rings & hooks
  - Broken buckles
  - Dirt & foreign objects



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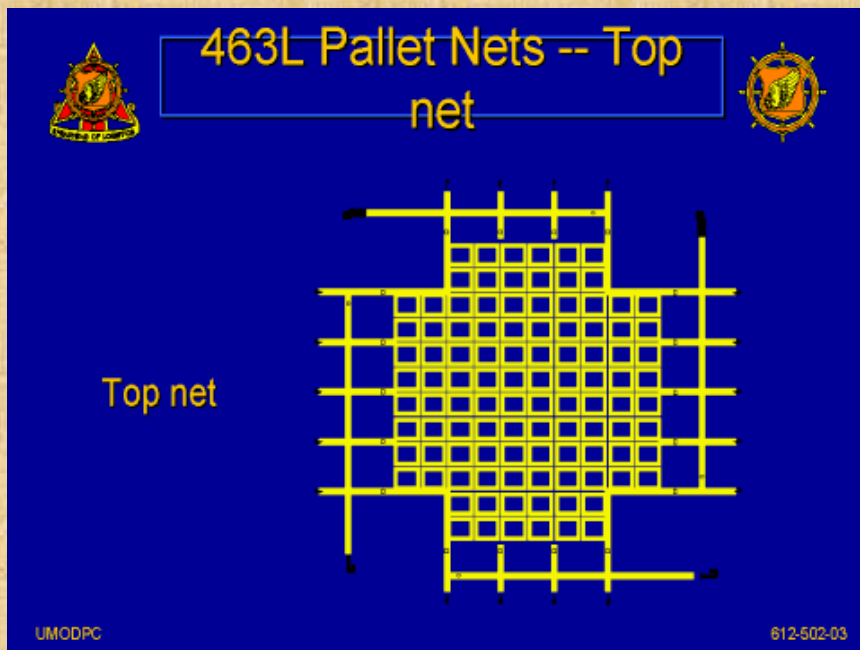
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**Net serviceability is checked after spreading the net on a dry, clean surface. Inspect the bands and straps for tears and fraying. Also check the following items:**

- (1) Broken or loose stitches.**
- (2) Broken, damaged, or missing O-rings and hooks.**
- (3) Missing or broken buckles on adjustable straps.**
- (4) Check for dirt, foreign objects, and mildew.**

**Return questionable pallets and nets to the ITO or other designated installation POC for pallet repair or disposal.**





**UMOD 2.10.3.2.5**

**This picture shows the layout of a top net. Note that the net has a long side and a short side. The long side has 5 hooks to connect to the long side of the pallet if only using the top net, or to the long side of the side nets. The short side has 4 hooks. The last hook running perpendicular to the other hooks is the belly band hook. This hook provides support along the lower portion of the net when the net is in place over the cargo.**



## 463L Pallet Nets -- Top net (Cont)



**UMOD 2.10.3.2.5.1**

- The top net attaches by hooks to the rings on the side nets or, when used alone, to the tie-down rings on pallet.
- When a top net is used alone, the net band sewn closest to the hooks (referred to as belly band) must not be more than eight inches from the top of the pallet surface.

**The top net attaches by hooks to the rings on the side nets or when used alone, to the tie-down rings on the pallet. When a top net is used alone, the net band sewn closest to the hooks (referred to as the bellyband) must not be more than eight inches from the top of the pallet surface.**





## 463L Pallet Nets -- Top net (Cont)



**UMOD 2.10.3.2.5.1**

- The top net can be used alone or with additional straps to secure the load



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**This picture shows a top net used without the side nets. The load has additional cargo straps placed over the top of the cargo.**



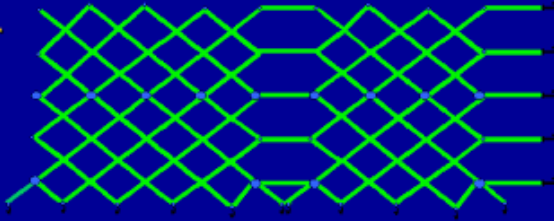
## 463L Pallet Nets --Side Nets



UMOD 2.10.3.2.5

- The side nets attach by hooks to the rings of the 463L pallet.

Side nets  
(1 of 2)



- The side nets have a long side with six hooks and short side with five hooks to match the long and short sides of the 463L pallet.

**The side nets (set of two per pallet) attach by hooks to the 463L pallet rings. Like the top net, the side nets have a long side with six hooks and a short side with five hooks. This matches the long and short sides of the 463L pallet.**



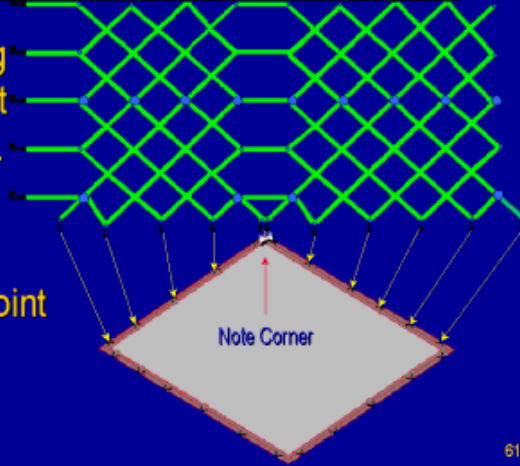


## 463L Pallet Nets --Side Nets (Cont)



UMOD 2.10.3.2.5.1

- Connecting the side net to the 463L pallet
- All hooks point to inside



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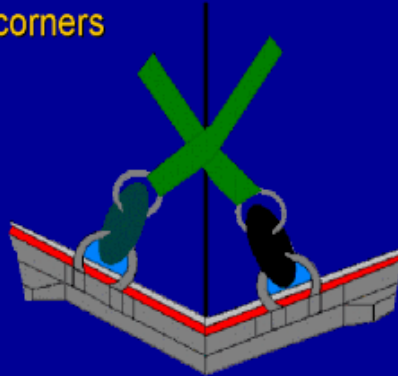
**When connecting the side nets to the pallet, overlap the corners and ensure all hooks are pointed inward toward the pallet load.**



## 463L Pallet Nets --Side Nets (Cont)



Straps crossed at corners



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612-602-03

**UMOD 2.10.3.2.5.1**

**This slide shows the crossed straps  
at the corners of the pallet.**





## 463L Pallet Restrictions



UMOD 2.10.3.2.6

- 463L pallets load restrictions prevent damage to cargo, 463L pallets and nets, and the aircraft
- Ensure build-up pallets do not exceed the dimensional and load bearing capabilities of the aircraft.

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**463L pallet load restrictions prevent damage to the cargo, the 463L pallet and nets, and the 463L pallet systems installed in the aircraft. The restrictions also ensure built-up pallets will not exceed the dimensional and load bearing capabilities of the aircraft. As we discussed earlier in this lesson, there are some constraints at specific pallet locations aboard the airlift aircraft. Coordinate with the Air Force representative to identify the specific dimensional size and shape restrictions, and other requirements peculiar to the aircraft for which the load is prepared.**



## 463L Pallet Restrictions -- Weight Maximums



UMOD 2.10.3.2.0

- Maximum weight capacity is 10,000 lbs
- Maximum load of 250 pounds for any given square inch
- Tie-down ring load must not exceed 7,500 pounds
- If top net alone is used to restrain cargo, the cargo load capacity is 2,500 lbs

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**Weight maximums for build-up of a 463L pallet do not include the weight of the pallet. The 463L pallet weights 290 pounds and the net set weights 65 pounds.**

**(1) The 463L pallet has a maximum load capacity of 10,000 pounds.**

**(2) The maximum loading footprint for the surface of the pallet is 250 pounds for any given square inch. If the load exceeds this limit, shoring must be used to spread the load. The loading footprint with shoring must not exceed the maximum capacity of the pallet.**

**(3) The maximum load on each tie-down ring must not exceed 7,500 pounds.**

**(4) If only a top net is used to restrain the cargo, the cargo load capacity is 2,500 pounds.**





## 463L Pallet Restrictions -- Height Maximums



UMOD 2.10.3.2.0

- Height maximums for built-up 463L pallets relate to the weight of the cargo load.
- With cargo load of 10,000 lbs - the height will not exceed 96 inches
- With cargo load of 8,000 lbs or less - the height will not exceed 100 inches
- When only the top net is used, the height is limited to 45 inches, and weight to 2,500 pounds

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**Height maximums for built-up 463L pallets relate to the cargo load weights.**

**(1) For a-cargo load of 10,000 pounds, the height will not exceed 96 inches.**

**(2) For a cargo load of 8,000 pounds or less, the height will not exceed 100 inches.**

**(3) When only a top net is used to cover the cargo, the height will not exceed 45 inches and the cargo weight will not exceed 2,500-pounds.**



## UMOD 2.10.3

### Building the 463L Pallet

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**We will now discuss the procedures for building a 4**





## Building a 463L Pallet



**UMOD 2.10.3.3.1**



- Place the pallet on dunnage before beginning the build-up.

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**Place the pallet on dunnage before beginning to build. Dunnage consists of a minimum of three 4-inch by 4-inch by 88-inch pieces of lumber equally spaced under the 463L pallet. Dunnage protects the lower surface of the pallet and aids the movement of the pallet by forklift. Ship the dunnage with the pallet to provide for pallet protection and movement after unloading at the destination.**



## Pallet Cargo Placement



**UMOD 2.10.3.3**

- Properly building a load on a 463L pallet contributes to the safe air movement of the cargo
- Place cargo items in square or pyramid shape when building pallet



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**Properly building a load on a 463L pallet contributes to the safe air movement of the cargo. When constructing a pallet load, place cargo in a square or pyramid shape to the extent possible to make the load stable and easier to secure on the pallet.**

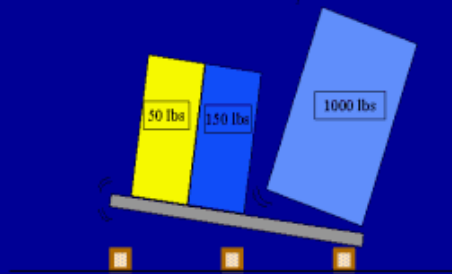




## Pallet Cargo Placement (Cont)



**UMOD 2.10.3.3.2**



**Heavy Ended Pallet**

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**Some of the more important items to remember when building a pallet are:**

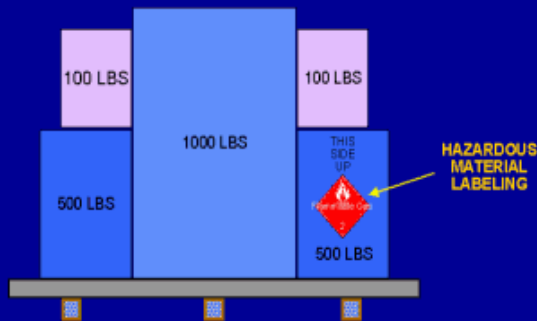
- (1) Distribute large and heavy objects from the center of the pallet outward to prevent the pallet from becoming heavy on one end. This helps maintain the pallet center of balance. Do not exceed the usable dimensions of 84-inches by 104-inches.**



## Pallet Cargo Placement (Cont)



UMOD 2.10.3.3.2



Correct placement of cargo & labeling  
of hazardous materials

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- (2) Place lighter or smaller objects on or beside heavy objects.
- (3) Hazardous cargo must be packaged and labeled by certified personnel following the directions in TM 38-250, Preparing of Hazardous Materials for Military Air Shipments. Load hazardous cargo so that it is accessible. This allows for ease of jettison in the event of an emergency.





## Pallet Cargo Placement (Cont)



**UMOD 2.10.3.3.2**

28 - inch



24 - inch

Load C/B must fall within a  
24-inch by 28-inch rectangle  
on the pallet center

**(4) The pallet load center of balance must fall within the shown parameters. This ensures that the load meets aircraft balance requirements.**



## Build and Document the Pallet



**UMOD 2.10.3.3**

- Secure the load on the pallet using proper tie-down procedures and equipment.
- Weigh each pallet including dunnage that accompanies pallet
- Measure pallet height
- Record pallet height and weight on cargo manifest and pallet identification card

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**(5) Secure the load on the pallet using proper tie-down equipment and techniques. We will discuss these procedures shortly.**

**(6) Weigh each loaded 463L pallet with the dunnage that will accompany the pallet. Measure the cargo height. Record the weight and height on all copies of the cargo manifest. The weight is also recorded on the pallet identification card.**





## Pallet Markings



UMOD 2.10.3.3

- The pallet requires marking to identify contents, ownership, and other information required for the air move



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**The pallet requires marking to identify contents, ownership, and other information required for the air move. Pallet boards and pallet identification cards provide this marking. Each pallet should have two pallet boards and two identification cards displayed. Place one of each on the 88-inch side and the 108-inch side of the pallet.**



## Pallet Board Information



UMOD 2.10.3.3

- The information on the pallet board includes:
  - A packing list of the shipping containers on the pallet including any hazardous materials
  - The identification and name of the unit
  - Military shipment label and/or RF tag
  - List of points of contact & telephone numbers
  - Gross weight must be displayed on both boards

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**The information on the pallet board includes a packing list of the containers on the pallet including hazardous materials, the identification and name of the unit, a military shipment label and/or AIT tag/device, and a list of points of contact with telephone numbers for the pallet's aerial ports of embarkation and debarkation. Be sure that the weight of the pallet is on both boards.**





## Tie-down Equipment



**UMOD 2.10.3.3**

- Tie-down equipment is essential to ensure the cargo is secured during flight.

Nets	CGU-LB Nylon Strap
MB-1 Tie-down chain	MB-1 Tension Device
MB-2 Tie-down chain	MB-2 Tension Device

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**Tie-down equipment is essential to ensure the cargo is secured and does not cause damage to other cargo, passengers, or the aircraft during flight.**

- (1) Nets are used to contain multiple loose items that fit within the usable dimensions of a single 463L pallet, and can be restrained within the dimensions of the net openings. Items smaller than the net openings require packaging to ensure their security.**
- (2) The CGU-LB, Nylon Strap, has a 5,000 pound capacity and is used for securing light loads or as a supplemental restraint.**
- (3) The MB-1, Tie-down Chain, 10,000 pound capacity, is used to secure heavy loads.**
- (4) The MB-1, Tensioning Device, 10,000 pound capacity, is used to secure the MB-1, Tie-down Chain.**
- (5) The MB-2, Tie-down Chain, 25,000 pound capacity, is used when the load exceeds the capacity of the MB-1, Tie-down Chain.**
- (6) The MB-2, Tensioning Device, 25,000 pound capacity, is used when the load exceeds the capacity of the MB-1, Tensioning Device.**



## Other 463L Pallet Equipment



**UMOD 2.10.3.3**

- Pallet covers
  - Use plastic for water sensitive or absorbent items
  - Short term use only
- Pallet Coupler
  - Ties two or more pallets together
  - Used for long loads

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**The plastic pallet cover is used to protect water-sensitive or absorbent cargo such as electronics, paperwork and baggage. The Pallet Coupler is used to join two or more pallets together for loads that exceed the dimensions of the pallet. We will show a coupled pallet shortly.**





## Tie-down Techniques



UMOD 2.10.3.3

- Tie-down techniques vary according to the items to be secured
  - The barrier and chain techniques
    - + Palletized vehicles and large heavy items are chained to pallet
  - 5,000 pound tie-down straps

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**Tie-down techniques vary according to the items to be secured.**

**(1) The barrier and chain technique is used for loose, heavy items such as lumber and pipe. Chains are arranged to form a barrier and to secure the load to the pallet.**

**(2) Palletized vehicles and large and heavy items are chained to the pallet. Do not attach more than 50 percent of the restraint to the axles of wheeled equipment.**

**(3) 5,000-pound tie-down straps may be used to secure individual items or as a supplemental restraint for the 463L pallet nets.**



## Net Installation



UMOD 2.10.3.3

- Nets are used to secure multiple loose items that fit within the useable dimensions (84 by 104 inches) of a single 463L pallet.
- Start at one corner and work around the pallet with side nets
- Pull the nets as high as they will go and hook the two side nets together.
- Center the top net over the cargo

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**Nets are used to secure multiple loose items that fit within the usable dimensions (84 by 104-inches) of a single 463L pallet.**

**(1) Start at one corner and work around the pallet by placing the two side nets around the cargo on the pallet. The long side of the side net goes with the long side (108-inches) of the 463L pallet. Hook the side net hooks into the pallet rings. Make sure the side net straps with hooks crisscross at the corners of the pallet.**

**(2) Pull the net as high as it will go and hook the two side nets together. Do not completely tighten the tension-adjustable hooks between the two side nets.**

**(3) Center the top net over the cargo. The long side-of the top net goes with the long side of the side nets and pallet.**





## Net Installation (Con't)



UMOD 2.10.3.3.9

- Hook the top net into the side nets using the 0-rings located on the top portion of the side nets for a tall load, or the 0-rings located halfway up the side nets for a shorter load.
- Pull evenly on all straps opposite each other to tighten the top net.
- Tuck the loose ends of all straps into the netting to prevent snagging during loading or unloading

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- (1) Hook the top net into the side nets using the 0-rings located on the top portion of the side nets for a tall load, or the 0-rings located halfway up the side nets for a shorter load. Never hook the top net into the bottom row of 0-rings on the side nets. If this occurs, either use the top net alone or redistribute the cargo with other pallets.**
- (2) Pull evenly on all the straps that are opposite each other to tighten the top net. Ensure that the net stays equally distributed over the cargo. Tighten the side net straps.**
- (3) Tuck the loose ends of all straps into the netting to prevent snagging during loading or unloading operations.**



## Married Pallets



UMOD 2.10.3.3.

- Married pallets:
  - Used for cargo that exceeds length of a single pallet.
  - Formed by joining two or more 463L pallets
  - Pallet couplers are placed in the indents along the aligned pallet sides to lock the pallets together.

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**Cargo of odd shapes and sizes may not fit on individual pallets.**

**(1) Married pallets are needed when the requirement exists to ship cargo that exceeds the length of a single pallet.**

**(2) Married pallets are formed by joining two or more 463L pallets together. The pallets are aligned along the 108-inch side of the pallet.**

**(3) Pallet couplers are placed in the indents along the aligned pallet sides to lock the pallets together.**

***Click the button "Resources" to view an Example of a Married Pallet.***





## Married Pallets (Con't)



UMOD 2.10.3.3.10

- Married pallets become a rigid structure after they are locked into the 463L rails on the aircraft.
  - Pallets must be kept level during loading/unloading
- Married pallets should be constructed on high-liner docks or other platforms.

**The married pallets become a rigid structure after they are locked into the 463L rails on the aircraft. Therefore, to move, load, and unload married pallets they need to be kept level. Use an elevated platform such as a rollerized cargo deck or flatbed truck to marry and build-up married pallets. If possible, avoid using a K loader. Using a K loader for this purpose means the K loader is not available for potential higher priority tasks.**



## Married Pallet Load



**UMOD 2.10.3.3.**



high-liner dock and coupled pallet

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**This slide shows a helicopter secured to married pallets. Note that this load was built on a high-liner dock. You can see the helicopter blades placed under the aircraft and attached to the pallets.**





## UMOD 2.10.3

Determine Center of  
Balance

UMODPC

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**During the final portion of this lesson we will discuss how to calculate the center of balance (CB) for vehicles and equipment.**



## Determine Center of Balance



UMOD 2.10.3.4

- Each aircraft has a Center of Balance safety range
- The unit's aircraft cargo must fall within the aircraft safety range
- The term CB refers to the balance point of items of cargo or equipment that go into the aircraft

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**Each aircraft has a center of balance safety range. Aircraft balance is mainly affected by weight variations along the longitudinal (front to back) axis of the cargo inside the aircraft. The term CB refers to the balance point of individual cargo or equipment items that will be loaded aboard the aircraft. Your certified air load planner will verify that the load falls within the safety range when the aircraft load plan is developed. As the UMO, you must know how to calculate the center of balance for your unit's vehicles and equipment.**





## Determine Center of Balance (Cont)



UMOD 2.10.3.4.1

- Determine weight and CB of a vehicle after all secondary loads are secure
  - No items should be added or removed from a vehicle that has been weighed and the CB calculated. If changes are made, the vehicle must be weighed again and the CB recalculated

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**The unit shipping the cargo is responsible for marking each item of cargo with the correct gross weight and a CB point. This applies to all cargo items measuring 10 feet or longer and those items that have a center of balance point other than the physical center of the cargo.**

**The vehicle weight and CB is determined after secondary loads are secured. After the vehicle is weighed and the center of balance computed, nothing is added or removed from the vehicle. If any weight changes are made to the vehicle or its secondary load, the vehicle must be weighed again and the CB recomputed.**

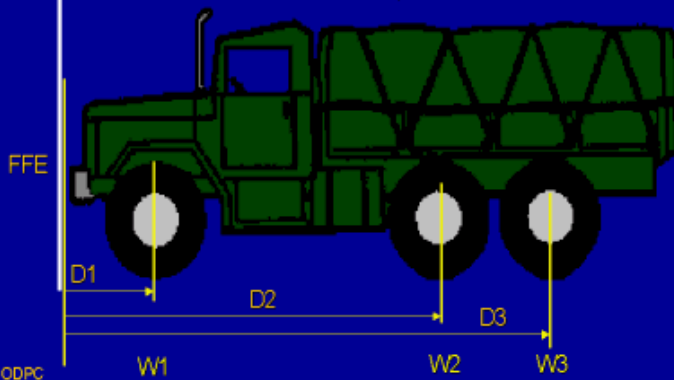


## Determine Center of Balance (Cont)



UMOD 2.10.3.4.1

- Determine distance from front forward edge (FFE) to the middle of the front, intermediate & rear axles



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The first step in CB calculations is to determine the distance from the front forward edge (FFE) of the vehicle to the center of the front and rear axles. This slide shows the distance from the FFE to the front axle as D1, the distance from the FFE to the center of the intermediate axle as D2, and D3 as the distance from the FFE to the center of the rear axle. We will use the front, intermediate and rear axle weights in determining the vehicle center of balance.





## Determine Center of Balance (Cont)



UMOD 2.10.3.4.1

W1= Front axle weight in pounds

W2 = Intermediate axle weight

W3= Rear axle weight

D1= Distance in inches, from FFE to Front axle

D2= Distance from FFE to Intermediate axle

D3= Distance from FFE to Rear axle

$$CB = \frac{(W1 \times D1) + (W1 \times D1) + (W2 \times D2)}{\text{gross weight}}$$

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**This is the formula to compute CB to the nearest whole inch. We start with measuring the weight and distance for the following:**

- (1) W1 = Front axle weight in pounds**
- (2) W2 = Intermediate axle weight in pounds**
- (3) W3 = Rear axle weight in pounds**
- (4) D1 = Distance in inches from FFE to the center of the front axle**
- (5) D2 = Distance in inches from FFE to the center of the intermediate axle**
- (6) D3 = Distance in inches from FFE to the center of the rear axle**

**We then place this information into the following formula.**

$$CB = (W1 \times D1) + (W2 \times D2) + (W3 \times D3)$$

**Total gross weight**

**The formula is CB equals the weight of the first axle times the D1 in inches (the distance from FFE to the center of the front axle) PLUS the weight of the intermediate axle times D2 in inches, PLUS the weight of the rear axle times D3.**

**The total is then divided by the gross weight of the vehicle. The result is the distance from the FFE to the center of balance point of the vehicle. If the vehicle has just two axles, take out the intermediate axle from the formula. If you have more than three axles or you have an attached trailer, add axles to the formula. For example, the fourth axle would be W4 X D4.**



## Determine Center of Balance (Cont)



UMOD 2.10.3.4.1

W1 = 5,000 lbs

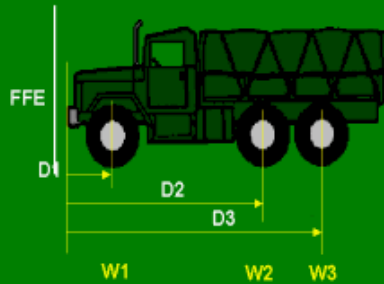
W2 = 5,000 lbs

W3 = 5,000 lbs

D1 = 35 inches

D2 = 131 inches

D3 = 177 inches



Lets look at an example. The FFE is the front bumper. D1 is listed as 35 inches measured from the front bumper to the center of the front axle. D2 is 131 inches from FFE and D3 is 177 inches from FFE. The front axle (W1) weight is 5,000 pounds, W2 is 5,000 pounds and W3 is 5,000 pounds. Adding all the axle weights  $W1 + W2 + W3 = 15,000$  pounds which is the gross weight needed for our formula.





## Determine Center of Balance (Cont)



UMOD 2.10.3.4.1

$$CB = \frac{(W1 \times D1) + (W2 \times D2) + (W3 \times D3)}{GW}$$

$$CB = \frac{(5,000 \times 35) + (5,000 \times 131) + (5,000 \times 177)}{15,000}$$

$$CB = \frac{175,000 + 655,000 + 885,000}{15,000} \left[ \frac{1,715,000}{15,000} \right]$$

$$CB = 114.33 \text{ or } 114 \text{ inches (rounded to nearest inch)}$$

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We then plug these numbers into the formula as shown on the screen.

$$CB = \frac{(5000 \times 35) + (5,000 \times 131) + (5,000 \times 177)}{15,000}$$

$$CB = \frac{175,000 + 655,000 + 885,000}{15,000} = \frac{1,715,000}{15,000}$$

$$CB = \frac{1,715,000}{15,000}$$

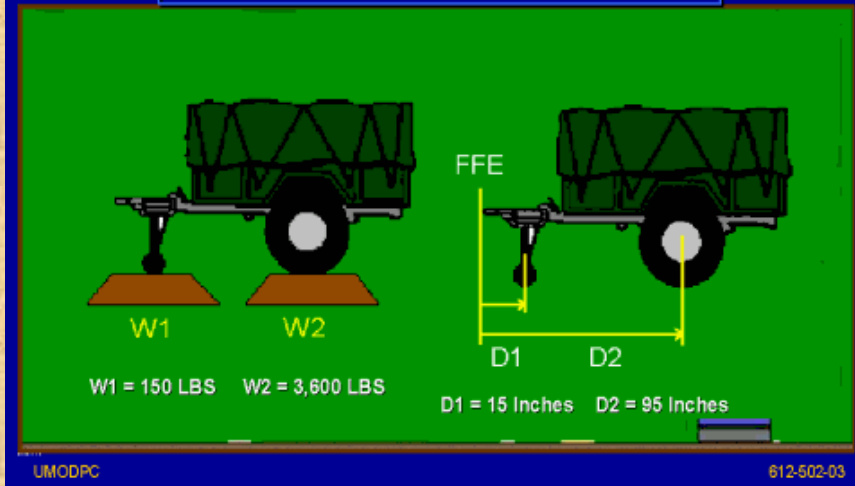
CB = 114.33 or 114 inches rounded to the nearest inch



## Determine Center of Balance -- Trailer



UMOD 2.10.3.4



**In the case of a detached trailer you would use the tongue weight as the first axle weight. Your formula would be the same. W1 = 150 lbs, W2 = 3,600 lbs, D1 = 15 inches & D2 = 95 inches.**





## Determine Center of Balance -- Trailer (Cont)



$$CB = \frac{(W1 \times D1) + (W2 \times D2)}{GW}$$

$$CB = \frac{(150 \times 15) + (3,600 \times 95)}{3,750}$$

$$CB = \frac{2,250 + 342,000}{3,750}$$

$$CB = 91.8 \text{ or } 92 \text{ Inches}$$

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$$CB = \frac{(150 \times 15) + (3,600 \times 95)}{3,750}$$

$$CB = \frac{(2,250 + 342,000)}{3,750} = \frac{344,250}{3,750}$$

$$CB = 91.8 \text{ or } 92 \text{ inches rounded to the nearest}$$

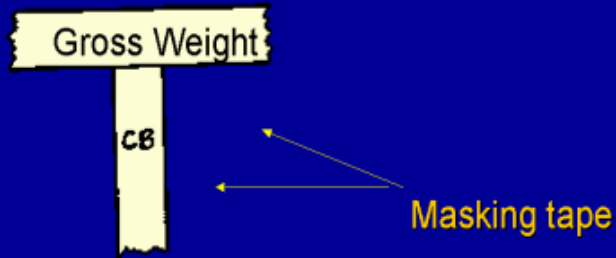


## Center of Balance Marker



UMOD 2.10.3.4

After computing CB, mark both sides of the vehicle with masking tape to form a "T" shape.



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**After computing the CB, mark both sides of the vehicle with masking tape to form a "T" shape at the center of balance point. Use a grease pencil or magic marker to write the vehicle gross weight in the crossbar of the "T". Write the letters "C/B" in the vertical bar to mark exact CB position. Just below this mark the number of inches from the FFE (RDL). Finally, mark the axle weights above each axle.**

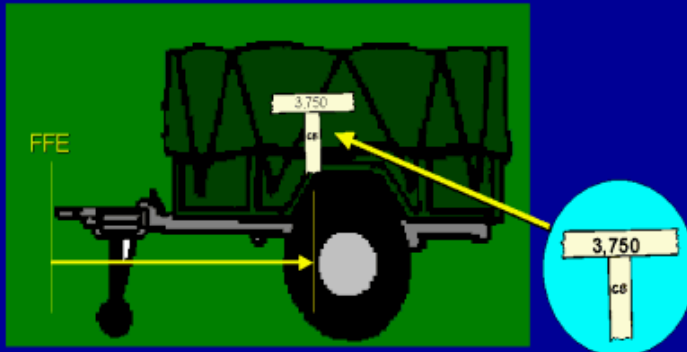




## Center of Balance Marker -- Trailer



UMOD 2.10.3.4.3



CB is 92 inches from FFE

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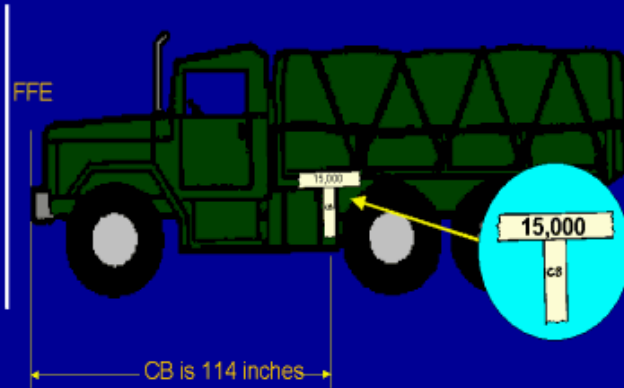
**This slide shows the placement of the marker on the trailer. It is 92 inches from the FFE.**



## Center of Balance Marker -- Truck



UMOD 2.10.3.4.3

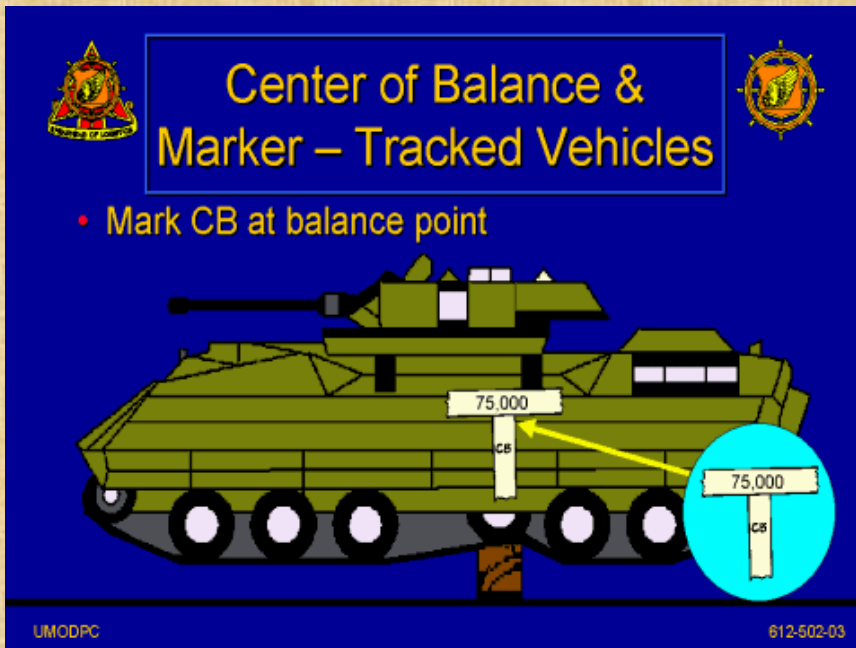


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**This slide shows the placement of the CB marker on a truck. The CB is 114 inches back from the FFE.**





**This next slide shows the center of balance for a tracked vehicle. Place a log or other similar object that the tracked vehicle can move across on the ground. The center of balance is the point where the vehicle tips from back to forward. This is the place to put the "T" marker. Be sure to include the total vehicle weight and the number of inches from the FFE.**



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UMOD 2.10.

## RECEPTION, STAGING, ONWARD MOVEMENT & INTEGRATION (RSO&I)

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During the activities of the reception, staging, onward movement to POE, and strategic lift deployment phases. We also identified the various UMO actions and responsibilities that occur during these phases. Your UMO responsibilities continue after your unit arrives in theater and begins the reception, staging, onward movement and integration processes, collectively known as RSO&I. Your unit's success in completing this last deployment phase will be dependent in large part on your coordination and planning accomplishments prior to and during RSO&I operations. Remember that when the RSO&I process ends, your unit will begin to perform its operational mission in the new area of operations.

For your unit to successfully complete RSO&I, you, as UMO, must first understand the reception, staging, onward movement and integration processes, and the movement activities that occur during these processes. Once you understand the process, you can begin the preparation required to assist your unit in navigating through this last deployment phase. During this lesson we'll look at the various RSO&I processes and the numerous organizations that will assist you and your unit as you move through these processes. We'll also identify and discuss the various unit and UMO level RSO&I considerations and responsibilities for units undergoing RSO&I. The ultimate goal is to provide you the knowledge and tools you will need to plan and





## Deployment Phases



- ① Pre-deployment Activities
- ② Movement to POE
- ③ Strategic Lift
- ④ Reception, staging, onward movement & integration (RSO&I)







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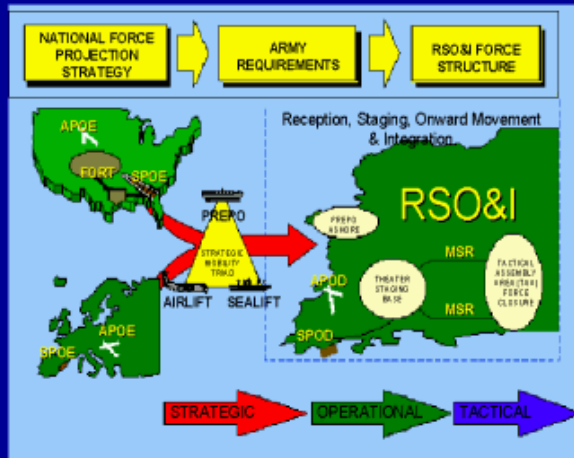
**As a quick review, these are the four deployment phases of force projection operations. To this point in the course we've discussed predeployment activities, movement to POE, and strategic lift. We'll now begin Phase IV, RSO&I.**



## Deployment Process



UMOD 2.10.4.2



ment process.

Note the left side of the slide which illustrates the movement from fort to POEs. As you'll recall, the deploying unit is principally responsible for planning and for executing many of the predeployment and movement to POE activities. Once the unit departs the POE, the responsibility for the strategic lift phase passes to USTRANSCOM. When the unit arrives in theater, it begins RSO&I.

On the right hand side of the slide are the RSO&I processes. The process for reception is a responsibility between the strategic level (arriving USTRANSCOM assets) and the operational level. The theater commander and USTRANSCOM both have responsibilities for reception activities. As your unit begins to move inland, unit staging and onward movement is normally within the operational level and the responsibility of the theater CINC or Joint Force Commander. Integration represents the interface between the operational and tactical levels, and involves the Joint Force Commander and the tactical level commander, such as the Corps or Division Commander. The key point here is that theater planning and execution of RSO&I is largely an operational level responsibility performed by the theater commander. While your unit has RSO&I responsibilities, they are planned and executed according to the theater and Army Service Component Command (ASCC) RSO&I plans.





## RSO&I -- What Is It?



UMOD 2.10.4

### RSO&I -- A New Term for an Old Problem

*Problem: How to receive personnel and equipment into a theater of operations, rejoin these elements into combat ready units, and integrate these units into the theater's command structure.*

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**What is RSO&I, exactly? As the slide states, RSO&I is a relatively recent term for a problem that has faced Army deployments throughout history. In short, how do we receive our soldiers and equipment in theater, rejoin them into effective combat ready units, and integrate the units into the theater command and control structure? The Army has four interrelated processes that expedite the transition of arriving forces and materiel into combat-ready units. These processes are reception, staging, onward movement and integration. We'll look at the major activities that occur during each process on the next four slides.**



## RSO&I -- Reception



UMOD 2.10.4.3

- Reception:
  - Unloading passengers and equipment from strategic lift
  - Marshaling arriving units
  - Transporting units to staging areas (if required)
  - Providing deploying soldiers life support

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**Reception involves unloading soldiers and equipment from strategic lift in the theater or area of operations. In some cases, such as intratheater deployments, reception could involve other modes such as personnel arriving by bus and equipment by trains. After arrival, soldiers and equipment are marshaled in preparation for movement. Reception includes the movement of personnel and equipment to staging bases, if required. During the reception process, life support such as messing and billeting must be provided to arriving soldiers.**





## RSO&I -- Staging



UMOD 2.10.4.3

- Staging:
  - Assembling & organizing arriving personnel and equipment into units and forces
  - Building combat power
  - Preparing units for onward movement
  - Providing deploying soldiers life support until unit is self sustaining

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**The second RSO&I process is staging. During staging, arriving unit equipment and soldiers are rejoined into units. Staging normally occurs in theater staging bases (TSBs), which may be well inland from ports of debarkation. TSBs may be required because space limitations preclude reassembly of combat units at the SPODs and APODs. The soldiers arrive at an APOD and the majority of the soldiers move to the staging area. The unit's equipment arrives at an SPOD and may be shipped separately from unit personnel to the staging area. In some scenarios, the unit could take possession of their equipment in SPOD marshaling areas and move it to the staging area. Within staging areas, the Joint Force Commander builds his combat power as units are reassembled and prepared for onward movement to tactical assembly areas (TAAs) or other destinations. Staging bases must have a capability to provide life support until the unit is self-sustaining.**



## RSO&I -- Onward Movement



**UMOD 2.10.4.3**

- **Onward Movement:**

Units & equip move from reception & staging areas to tactical assembly areas (TAAs) or other destinations

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**During onward movement, the unit and equipment moves from reception areas at the port or from staging areas, to the TAA. Due to the large number of forces that may be moving over the lines of communications, centralized movement control is normally established at the theater level.**





## RSO&I -- Integration



UMOD 2.10.4.3

- Integration:
  - Authority over deploying unit is transferred to designated commander in theater
  - To achieve integration--
    - + Unit must be operational and mission ready
    - + Unit must be absorbed into joint force

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**During integration combat ready units are merged into the operational plan. Authority over the unit is transferred to a designated commander for unit employment within the theater of operation. This transition normally occurs in the tactical assembly area. There are two prerequisites for achieving integration:**

**(1) The unit must become operational and mission ready. It must be able to move, fight and communicate, and to meet the readiness standard prescribed by the tactical commander.**

**(2) The unit must also be absorbed into the joint force, and receive command and control from its higher headquarters.**

**We'll now discuss Unit and UMO planning considerations for RSO&I operations.**



## Unit and UMO Planning Considerations for RSO&I



UMOD 2.10.4

- Review procedures and tasks in higher headquarters and theater RSO&I plans
- Is deployment opposed or unopposed?
  - For opposed operations, units configure tactically for deployment.
  - For unopposed operations:
    - + Personnel normally move by air, equip by sea
    - + Personnel & equip reassembled into tactical units in theater

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612-603-02

operations that the SO&I operations. Plans published by

the theater or ASCC commanders. These plans identify responsibilities and procedures for conducting RSO&I within the theater. Additionally, review any higher headquarters plans or guidance concerning the RSO&I operations, and coordinate with the higher headquarters unit movement officer. This is particularly important if the unit is deploying with its parent headquarters or as part of a task force. After gathering this information, the UMO can begin developing the units plan for undergoing the RSO&I processes.

A second consideration is whether the deployment is opposed or unopposed.

(1) In opposed operations, units must have sufficient combat capability to fight immediately upon arrival in-theater. Units are configured tactically for transport, and are under the command and control of the force commander from origin to destination. In this scenario, RSO&I is limited, as the unit's objective may be seizure of a lodgment area to expedite the unopposed entry of follow-on forces. As UMO, you will need to ensure aircraft load plans and aircraft departure sequence reflects the commander's priority for movement.

(2) In unopposed strategic deployments, soldiers routinely move by air and equipment moves by sea. Equipment is normally configured administratively to maximize the airlift and sealift transport capability. The UMO develops movement plans accordingly. When the





## Unit & UMO Planning Considerations RSO&I (Cont)



UMOD 2.10.4.4

- Is the unit drawing Army Prepositioned Stocks (APS) in theater?
  - If drawing APS -- Unit Cdr & UMO must review battlebook for APS site/ship.
  - Information is available in Automated Battlebook System (ABS)

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**Your unit may be directed to draw Army Prepositioned Stock (APS) after it arrives in theater. The APS is located at designated APS land sites or on Army Prepositioned Afloat (APA) vessels. This is a critical planning consideration. Units drawing APS deploy from home station with only their to-accompany-troop (TAT) equipment and not authorized pre-positioned (NAP) items. The first step for the Unit Commander and the UMO is to review the battlebook for the APS land site or APS vessel that the unit will draw stocks from. Information on these sites is found in the Automated Battlebook System, known as ABS. The battlebook contains the equipment and materiel available to the unit by location and vessel. APS operations are discussed in more detail later in this lesson.**



## Unit & UMO Planning Considerations RSO&I (Cont)



UMOD 2.10.4.4

- Develop unit battlebook with information about destination & RSO&I operations. Include:
  - Info/pictures on POD layout & facilities
  - Convoy routes
  - Plans/location for drawing APS
  - POCs & supporting commands/agencies



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After gathering all available information concerning the unit's pending RSO&I operations, the UMO should develop a battlebook or folder. The battlebook contains all information that will assist the unit in planning and executing its RSO&I responsibilities. Types of information in the book includes:

- (1) Information on the layout and facilities at ports of debarkation.
- (2) The convoy routes that the unit will use for onward movement.
- (3) The unit's detailed plans for moving to and from APS sites, and for drawing APS equipment.
- (4) A list of POCs and supporting commands and agencies that the unit will be supported by and will coordinate with in the theater of operations.
- (5) Copies of relevant movement orders





## Reception



UMOD 2.10.4



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**During this part of the lesson we will look at various activities that occur as part of the reception process. The focus will be on supporting units and activities that the UMO interfaces with during reception. We'll also discuss unit and UMO considerations and duties for reception operations. Due to the numerous scenarios that could occur during the reception process, we'll discuss reception in three basic scenarios that the unit may encounter.**



## Possible Reception Scenarios



UMOD 2.10.4.6

- Scenario 1. Unit and equipment arrive via air at APOD
- Scenario 2. Soldiers arrive by air at APOD, equip arrives by sea at SPOD. Soldiers and equipment reassembled at in-theater staging base
- Scenario 3. Soldiers arrive at APOD, then move to APS land or afloat locations to draw APS

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Reception

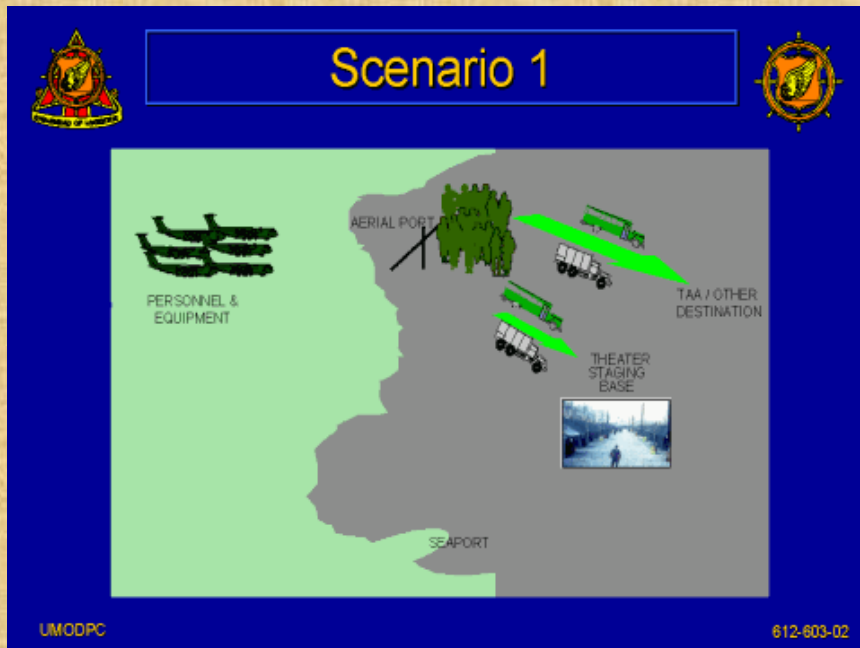
**(1) In scenario one, both the unit and its equipment arrive by air at the APOD. This scenario is generally applicable to early arriving units, or to light forces.**

**(2) In the second scenario soldiers arrive by air and equipment by sea. The soldiers and equipment then move separately from the APOD and SPOD to a theater staging base where the unit is reassembled. This scenario is typical of surge operations where large numbers of forces are received in theater in a relatively secure environment.**

**(3) In the last scenario, the deploying unit soldiers and their to-accompany-troop (TAT) items arrive in theater by air and then move to an APS site or vessel to draw APS equipment.**

**We begin the discussion with the APOD operations in Scenario 1. The APOD activities described are common to APOD**





**UMOD 2.10.4.6**

**The reception process begins with unit arrival in theater. This slide shows the flow of units and equipment as they arrive at the APOD, and then begin movement to theater staging bases, tactical assembly areas, or other designated destinations.**



## Reception Operations – Joint Aerial Port Complexes



- Soldiers and/or equipment may arrive at a Joint Aerial Port Complex
  - May be large complex containing airfield and numerous support functions
  - Includes terminal support functions such as A/DACG, movement control, equip and cargo holding areas, postal facilities, helicopter assembly areas

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**For large contingencies, arriving soldiers and equipment may be received at Joint Aerial Port Complexes, which supports all Services. The Joint Aerial Port Complex contains an air terminal and is a key node in reception operations. The Complex contains movement support organizations and provides numerous support functions and facilities. Organizations, functions and facilities include Arrival/Departure Airfield Control Groups (A/DACGs), port movement control teams, postal facilities, port security, host nation support elements, equipment and cargo holding areas, and helicopter assembly areas.**





## APOD Operations -- Key Organizations and Activities



UMOD 2.10.4.6.2

- Arriving unit interfaces with and is supported by:
  - USAF Aerial Port Squadrons (APS) or Tanker Airlift Control Elements (TALCE)
  - Arrival/Departure Airfield Control Group (A/DACG)
  - Movement Control (Movement Control Agency, Port Movement Control Team)
  - Designated support organizations from receiving command and host nation support

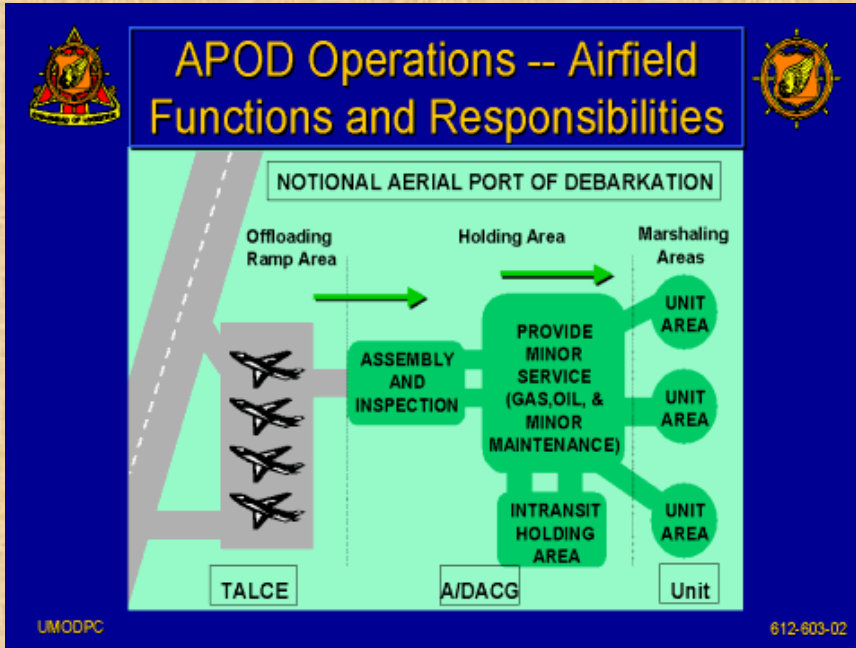
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**Responsibility for APOD operations is divided between the Army and the Air Force. The Air Force is responsible for the airfield including the loading, unloading, and servicing of aircraft. The Army is responsible for clearing personnel and cargo, and for providing life support to its soldiers. There are several key units and organizations the arriving unit interfaces with as part of the reception process. These include:**

- (1) The USAF Aerial Port Squadron (APS) or Tanker Airlift Control Elements (TALCE)**
- (2) The Arrival /Departure Airfield Control Group (A/DACG)**
- (3) Army movement control organizations such as a port movement control team**
- (4) Designated support organizations from the Command responsible for receiving the arriving forces.**

**Host Nation support elements may also be present to support reception operations. We'll discuss these organizations in more detail in the next several pages.**



**UMOD 2.10.4.6.2**

This slide illustrates a notional aerial port of debarkation. Note that the APOD is divided into three major areas to facilitate the processing of arriving units. These areas are the Offloading Ramp Area, the Holding Area and Unit Marshaling Areas. At the bottom of the slide you see the organizations that are primarily responsible for operations in these designated areas. We'll now discuss specific responsibilities and activities that occur in the three locations. You can find a detailed description of these activities in Chapter 8 of FM 55-65 and Appendix K to FM 100-17-3.





## APOD Operations -- Offload Ramp Area



UMOD 2.10.4.6.2

- TALCE operations and responsibilities
  - TALCE controls offload ramp area
  - Supervises aircraft unloading
  - Provide offload equip (e.g., MHE) as required
  - Releases aircraft loads to A/DACG control

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**The Offload Ramp Area is the location where aircraft unloading occurs. The US Air Force's TALCE controls the Offload Ramp Area and is responsible for all activities that occur in this location. The TALCE supervises aircraft unloading including the removal of shoring and dunnage. It also provides MHE with operators and special offloading equipment. Once unloaded, the TALCE releases control of aircraft loads to the A/DACG at predetermined release points.**



## APOD Operations -- Offload Ramp Area (Cont)



UMOD 2.10.4.6.2.4

- A/DACG operations and responsibilities
  - Maintains coordination with TALCE & arriving unit
  - Provides offload teams & support equipment (as required)
  - Accepts aircraft loads from TALCE at agreed location
  - Coordinates with TALCE for return of unit's shoring and dunnage

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**The Arrival/Departure Airfield Control Group (A/DACG) also has responsibilities in the Offload Ramp Area. The A/DACG could be an Ad Hoc organization provided by the command in theater responsible for receiving arriving forces, or it could be a cargo transfer company. For smaller scale deployments, the deploying unit may provide the A/DACG. In this scenario, the A/DACG must be on the first or second arriving aircraft to facilitate processing of follow-on aircraft loads. Within the Offload Ramp Area the A/DACG maintains coordination with the TALCE and the arriving unit. It provides aircraft offload teams and support equipment as required. The A/DACG may require a detail from the arriving unit to assist in offloading the aircraft. The A/DACG also coordinates with the TALCE for the return of unit shoring and dunnage. Once the aircraft is unloaded, the A/DACG accepts the load from the TALCE.**





## APOD Operations -- Offload Ramp Area (Cont)



- Arriving Unit responsibilities
  - Assist, as required, in unlashng and offloading aircraft
  - Retain shoring and dunnage for redeployment
  - Provide A/DACG copy of pax and cargo manifest

**The arriving unit also has responsibilities in the Offload Ramp Area. It assists as required in unlashng equipment and offloading the aircraft. The unit also ensures it receives and retains it shoring and dunnage for redeployment. The aircraft troop commander or chalk leader is responsible for providing a copy of the aircraft passenger and cargo manifests to the A/DACG.**



## APOD Operations -- Holding Area



UMOD 2.10.4.6.2

- A/DACG operations and responsibilities
  - A/DACG controls holding area
  - Coordinates with TALCE & arriving unit
  - Releases aircraft load to arriving unit
  - Coordinates move of unit pallets to unit marshaling areas
  - May provide minor services (fuel, maintenance) for arriving unit vehicles

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**From the Offload Ramp Area, the arriving unit moves to a Holding Area on the airfield. The Holding Area is used to process arriving aircraft loads for release to the arriving unit. The A/DACG controls the Holding Area and is responsible for its operation. A/DACG activities in the holding area include:**

- (1) Maintaining coordination with TALCE and the deploying unit for the processing of aircraft loads.**
- (2) Releasing the aircraft load to the arriving unit at a predesignated location.**
- (3) Coordinating MHE and movement of aircraft pallets to the unit marshaling area for pallet breakdown.**
- (4) Providing minor services such as fuel and maintenance for arriving unit vehicles.**





## APOD Operations -- Holding Area (Cont)



UMOD 2.10.4.6.2.1

- Arriving Unit activities
  - Provides a liaison to A/DACG to facilitate processing of arriving unit plane loads
  - Assists A/DACG as required
  - Drives unit vehicles from holding area to unit marshaling area
  - Coordinates with movement control teams that may be operating in port area

UMODPC

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**The arriving unit provides liaison to the A/DACG to facilitate the processing of arriving unit aircraft loads. The arriving unit also:**

- (1) Assists the A/DACG as required in processing aircraft loads for release to the units**
- (2) Drives the unit's vehicles from the holding area to the unit marshaling area, and**
- (3) Coordinates with movement control teams or other supporting movement organizations that are operating in the port area. This coordination is needed as the unit movement to the marshaling area may require convoy clearances or escorts.**



## APOD Operations -- Unit Marshaling Area



UMOD 2.10.4.6.2

- Arriving Unit activities
  - Install equipment that was removed for strategic deployment
  - Perform maintenance checks and refueling
  - Prepare and organize for movement (convoy, rail, airlift, inland water)

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**The arriving unit terminates its air movement and prepares for in-theater movement in Unit Marshaling Areas. These areas are normally located in close proximity to the airfield. Principal deploying unit activities in the marshaling area include:**

- (1) Re-installing equipment that was removed from vehicles for strategic transport. This includes unloading 463L pallets and then loading the cargo on other unit vehicles for onward movement.**
- (2) Performing required maintenance checks and refueling vehicles.**
- (3) Preparing for onward movement. Based on ASCC or theater RSO&I plans, the unit could move by rail, convoy, tactical airlift, or inland waterway. The unit organizes and prepares its equipment for onward movement based on the prescribed movement mode.**





## APOD Operations -- Unit Marshaling Area (Cont)



UMOD 2.10.4.6.2.

- Area Support Group (ASG) or other designated organization
  - May provide life support / services for deploying unit
- Movement Control Teams (MCTs)
  - Port & Area MCTs operate in APOD ops area
  - Assist units in onward movement
  - Coordinate & task for transportation assets required by deploying unit

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**Area, the unit may be provided life support and logistics support by an ASG or other designated unit. This support could include refueling and other light services. Movement control organizations, such as port and area movement control teams (MCTs) also operate in the APOD operations area. The arriving unit coordinates with these teams for movement modes and procedures for onward movement from the marshaling area to theater staging bases or to the TAA. The Unit also coordinates with MCTs to obtain transportation support to move equipment that is beyond the unit's organic transportation capability. To this point we have discussed APOD organizations, responsibilities, and functions. We'll now discuss UMO considerations and duties for APOD operations.**



## APOD Operations -- UMO Considerations & Duties



UMOD 2.10.4.6.2

- Develop unit plan for departing marshaling area based on higher hq's, ASCC & theater RSO&I plan
  - Unit may move equipment to railhead for onward movement to destination.
  - Vehicles may convoy and soldiers move by bus
- UMO coordinates move with MCT or other supporting movement organization
- UMO coordinates with ASG or other support units operating railheads, bus transport, etc.

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**There are a number of fundamental movement considerations and basic tasks the UMO must address as part of APOD operations. The first is to develop the unit plan for departing the APOD marshaling area for onward movement to theater destinations.**

**(1) Prior to the unit's arrival in theater, the UMO should gather information on procedures for moving from port areas. Sources for this information are higher headquarters, ASCC and theater RSO&I plans. Based on available information, the UMO develops unit plans for movement. The unit may move from the port area by one or more modes. Equipment could move to a railhead adjacent to the port area where it will be loaded on railcars. Soldiers and wheeled vehicles may move by convoy. Military transport or commercial buses could also be used to move personnel. The UMO develops the unit's plan for organizing and preparing the unit for movement by the required movement mode.**

**(2) The UMO coordinates with the MCT or other supporting movement organizations for movement details. This could include rail and convoy processing procedures, rail loading schedules, convoy march tables, unit movement responsibilities, and other information required to execute the move.**

**(3) The UMO also coordinates with the Area Support Group (ASG) representatives or other units that have been assigned responsibilities for operating railheads, convoy marshaling areas, bus transportation and other movement support functions. These supporting organizations provide many of the same movement support functions as the unit's installation provided during departure from home station.**





## APOD Operations -- UMO Considerations/Duties (Cont)



### UMOD 2.10.4.6.2.

- Bottom line: UMO performs tasks & coordination to move unit out of port area. May include:
  - Preparing for convoy move (convoy requests)
  - Organizing unit for rail (load teams, vehicle reconfiguration) bus, or other modes
- Key consideration: Split UMO operations
  - UMO arrives early to coordinate theater movements, alternate UMO supports APOE departure and arrives later in flow

UMODPC

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ns movement

tasks and coordination required to move the unit out of the port area and to its next destination. Based on the unit's prescribed movement mode, the UMO prepares supporting movement documentation, such as convoy requests. The UMO also ensures that the unit performs required equipment preparation and has required teams available for loading operations. This could include designation of air or rail load teams, reconfiguring equipment for its designated movement modes, and recommending to the commander the unit's organization for convoy operations.

A key planning consideration for the unit commander and UMO is where the UMO should be positioned in the unit's deployment flow. It is quite common for part of the unit to be in theater preparing for movement to destinations while the remainder of the unit is still deploying from the APOE. The UMO cannot be in two places at once. A possible solution is to have the UMO (or alternate UMO) positioned early in the movement flow to coordinate theater movement tasks, while the alternate UMO (or UMO) continues to support APOE departure operations.

This concludes the discussion on APOD operations. APOD activities are essentially the same for all three reception scenarios presented in this lesson, and will not be repeated. UMO considerations for movement from the APOD do change, however, based on the scenario. These differences will be identified when they



## Scenario 2



UMOD 2.10.4.6

- Soldiers arrive by air at APOD
  - Vehicle drivers move to SPOD
  - Unit main body moves to theater staging base
- Equipment arrives at SPOD
  - Drivers and mechanics prepare equipment for movement to theater staging base
- Equipment & soldiers reassembled at TSB

UMODPC

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arrive by  
air at the APOD. Part of the unit's advance party and vehicle drivers move to a designated SPOD and the unit's main body moves directly to a theater staging base. The unit's equipment arrives by ship at an SPOD, where unit drivers and mechanics prepare the equipment for movement to the staging base. Once equipment and soldiers arrive the staging base, they are reassembled into a unit.

This scenario would normally occur in force projection operations where large numbers of forces, equipment and sustainment items are being received in theater. Space limitations may preclude rejoining soldiers and their equipment in the SPOD or its immediate vicinity. Theater staging bases (TSB) are established away from the port area and are used to reassemble soldiers and equipment into operational





## Scenario 2 -- Air and Sea Reception



UMOD 2.10.4.6.3



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**This slide graphically depicts the scenario just described. Note the passengers and equipment moving separately from ports of debarkation to the theater-staging base. As we covered APOD operations in scenario 1, we'll now discuss the scenario 2 SPOD operations.**



## SPOD Operations -- Joint Water Port Complexes



UMOD 2.10.4.6.3

- Equipment arrival at Joint Water Port Complex
  - May be large complex with multiple piers (POL, RO/RO, container) & area for JLOTS operations
  - Includes terminal support functions/areas:
    - + Transportation mode ops & movement control
    - + Port Support Activity
    - + Convoy and helicopter assembly areas
    - + Vehicle, cargo and container holding areas

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**For contingency operations involving significant numbers of forces, Joint Water Port Complexes may be established for use by all Services. These complexes are large operations and will normally contain a number of US and host nation support organizations. The complex may have multiple piers to facilitate discharge of RO/RO, container, and POL vessels. The complex could also contain a beach area that supports joint logistics over-the-shore operations, or JLOTS. Terminal support organizations, functions and facilities within the terminal could include:**

- (1) Transportation organizations such as MTMC, a Composite Transportation Group (CTG) and Port Movement Control Teams**
- (2) A Port Support Activity to assist the port operator and an Area Support Group (ASG) to provide port support**
- (3) Convoy and helicopter assembly areas**
- (4) Vehicle, cargo and container holding areas**

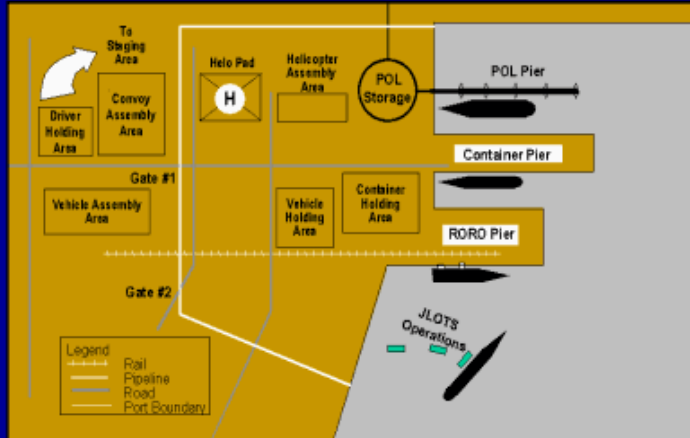




## Joint Water Port Complex (Notional)



UMOD 2.10.4.6.3



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**This slide shows a notional Joint Water Port Complex. In the upper left portion of the slide are numerous assembly and holding areas for arriving equipment. These areas are required to segregate and stage equipment and vehicles for onward movement by the various modes. On the right hand side of the slide are piers designed to accommodate various types of vessels and cargo. An area is also established for JLOTS operations.**



## SPOD Operations -- Key Organizations and Activities



UMOD 2.10.4.6.3

- Arriving unit interfaces with and is supported by:
  - MTMC -- Single Port Manager
  - Port Support Activity (PSA)
  - Movement Control Teams (MCT)
  - ASG or other designated supporting units

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**There are several key organizations and activities at the SPOD that the unit is supported by and interfaces with. These organizations and activities include:**

**(1) MTMC as the single port manager for seaports. A transportation terminal brigade or a transportation composite group may be operating the port for MTMC.**

**(2) A port support activity. The PSA could be an ad hoc organization provided by the command in theater responsible for receiving the deploying forces, or a designated cargo transfer company. For initial deployments, a PSA could be designated from the deploying force.**

**(3) Port movement control teams (MCT) operating in the SPOD to assist in processing arriving cargo and equipment for onward movement.**

**(4) An area support group (ASG) or other units designated to provide support to units arriving and departing the port area.**

**We'll discuss the responsibilities of these organizations and their activities more fully in the next several slides.**

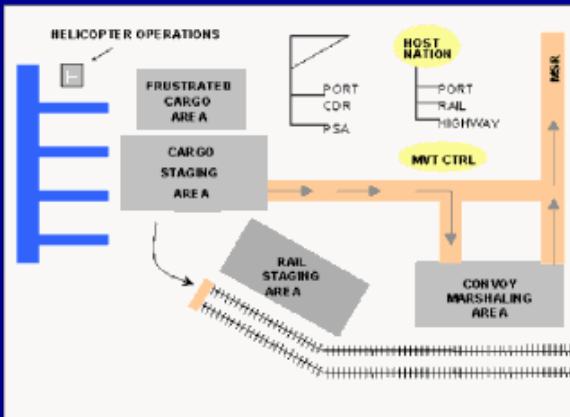




## SPOD Organization (Notional)



UMOD 2.10.4.6.3



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**This slide is an example of a notional SPOD operation. As the ship is discharged equipment and cargo is moved to a staging area where it is processed by the PSA. The equipment is then moved to marshaling areas and prepared for movement out of the port area. This SPOD contains a railhead for loading equipment for rail movement, and a marshaling area for staging vehicles that will depart via convoy.**



## SPOD Operations -- Port Operating Area



UMOD 2.10.4.6.3

- Port Area includes ship discharge area and port staging area
- MTMC manages port operations in port area
  - Discharges unit equipment from vessel
  - Stages equipment in port staging area
  - Releases equipment to unit

UMODPC

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**The port area includes the area where discharge operations take place, such as the piers, and a staging area for the discharged cargo. The staging area is used for transshipment and accounting of discharged cargo. MTMC is the manager for all port operations in the port area. MTMC's port operator performs the following tasks:**

- (1) Receives and assumes custody of unit equipment from the vessel master after it is discharged from the ship**
- (2) Stages the equipment in the port staging area**
- (3) Releases the equipment to the deploying unit**





## SPOD Operations -- Port Operating Area (Cont)



UMOD 2.10.4.6.3.

- Port Support Activity (PSA) operates in direct support of MTMC
- PSA operates in port staging area
  - Receives & stages discharged equipment
  - Provides licensed vehicle operators for all types of equipment
  - As required, provides maintenance capability to support arriving unit vehicles

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**The Port Support Activity operates in the port staging area, and is in direct support of the MTMC port commander. PSA organization and specific duties may vary depending on the type and amount of cargo being received. The PSA performs the following activities:**

- (1) Receives the discharged equipment and stages it in the port staging area**
- (2) Provides licensed vehicle operators for the type of equipment being received. This is a particularly important requirement, as the PSA may be required to drive vehicles off of RO/RO ships, or to move vehicles from the discharge area to the staging area.**
- (3) Provides a limited maintenance capability to support the discharge and movement of arriving unit vehicles**



## SPOD Operations -- Port Operating Area (Cont)



- Area Support Group (ASG) (or other designated organization)
  - May provide life support / services for deploying unit
- Movement Control Organizations
  - Port & Area MCTs operate in SPOD ops area
  - Assist units in onward movement
  - Coordinate & task for transportation assets required by deploying unit

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and  
 support group or other organization may be tasked to provide life support and services for deploying units. This support could include messing, billeting, minor maintenance, and a refueling capability. To assist deploying units in their movement out of the port, movement control organizations such as port and area movement control teams operate in the port area. These teams are the unit's POCs for movement procedures and requirements such as convoy requests and movement schedules. In some instances, the deploying unit may not have the required transportation assets to move all of its arriving equipment. The MCT coordinates or tasks for the required transportation to move the unit out of the port area.





## SPOD Operations -- Port Marshaling Area



UMOD 2.10.4.6.3

- Arriving Unit activities
  - Reinstall equipment removed for strategic deployment
  - Unpack containers and repack cargo as vehicle secondary loads
  - Perform maintenance checks and refueling
  - Prepare and organize equipment for onward movement (convoy, rail, inland water)

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where the arriving unit prepares for continued movement in the theater. Within the marshaling area the deploying unit:

- (1) Reinstalls equipment that was removed for the strategic deployment phase
- (2) Unpacks containers. The cargo is then repacked on vehicles or trailers for onward movement. In some cases the containers may be moved forward to the theater staging base by supporting transportation units. Unit personnel then unstuff the containers at the TSB during unit reassembly operations.
- (3) The key unit task in the marshaling area is to organize and prepare for onward movement. Based on the guidance from the theater movement control agency (TMCA) or designated movement command in theater, the unit equipment could depart by convoy, rail, inland water, commercial or military trucking, or a



## SPOD Operations -- Port Marshaling Area (Cont)



UMOD 2.10.4.6.3.

- Arriving Unit activities (Cont)
  - Port marshaling area may not be available
  - Units may have to move directly to destination
  - Prepare and organize equipment for onward movement at port staging area
  - Must coordinate with port commander to reduce interference at port

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**Port marshaling areas may not always be available for unit use. In these instances, the unit must be prepared to move directly to their destinations from the port staging area. This requires unit marshaling area activities to be performed in the port staging area. When this occurs, unit coordination with port commander representatives is required to ensure unit activities do not interfere with discharge operations.**

**Now that we've discussed the SPOD organizations, responsibilities and activities, we'll look at the UMO's role for SPOD reception.**





## SPOD Operations -- UMO Considerations & Duties



- Advance movement planning prior to theater arrival
  - Based on RSO&I plan, higher hq's guidance
- Coordination with MCT at APOD for transporting:
  - Advance party teams such as vehicle drivers to SPOD
  - Main body to theater staging base

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**There are a number of basic UMO considerations and duties for SPOD operations. Much like APOD planning, the initial UMO task is to do as much advance planning as possible prior to the deployment. The key documents for planning information are the unit's higher headquarters RSO&I plan and the theater RSO&I plan. Based on this information, the UMO develops unit requirements and responsibilities for equipment and personnel arrival at and departure from the seaports and airports.**

**The UMO coordinates with the supporting movement organization or MCT at the APOD to move the vehicle drivers to the SPOD. This movement could be by rail, bus, aircraft or commercial or military bus. When the unit vehicle operators and mechanics arrive at the SPOD, they begin to prepare the equipment for movement to the theater staging base. The UMO must also coordinate with the MCT for transportation to move the unit's main body soldiers from the APOD to the theater staging base. As the unit's vehicles are at the SPOD, the main body requires external transportation for movement. The MCT coordinates or tasks for the required transportation.**



## SPOD Operations -- UMO Considerations/Duties (Cont)



**UMOD 2.10.4.6.3.8**

- UMO Coordination at SPOD:
  - Port Manager staff & PSA for receiving unit equipment
  - Movement Control Agency or MCTs for onward movement of equip to theater staging base

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**The UMO, or a UMO representative also has coordination requirements at the SPOD for receiving unit equipment and planning its onward movement. Organizations and staff that the UMO coordinates with include:**

- (1) Port manager staff and the PSA for specific procedures and timelines for receiving unit equipment after it is discharged**
- (2) The movement control agency or supporting MCT for the movement of unit equipment to the theater staging base**





## SPOD Operations -- UMO Considerations/Duties (Cont)



UMOD 2.10.4.6.3.8

- Equipment could move to TSB by convoy, rail, military/commercial truck, inland waterway
  - UMO coordinates with MCT for required transportation assets, convoy clearances, local movement procedures
  - UMO coordinates with designated support units operating railheads, convoy assembly areas

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**From the SPOD, the unit's equipment could move to the TSB by convoy, rail, military or commercial truck, or a combination of these modes. Prior to beginning this movement, the UMO or a unit representative coordinates with the MCT for any required transportation assets, convoy clearances, local movement procedures, and movement schedules. The UMO also coordinates with support units operating railheads or convoy assembly areas to determine processing procedures and unit requirements.**



## SPOD Operations -- UMO Considerations/Duties (Cont)



UMOD 2.10.4.6.3.8

- Split UMO operations?
  - UMO representative may have to be at APOD
  - UMO representative may have to be at SPOD
  - UMO may have to coordinate at TSB or other designated areas
- UMO must oversee various operations & use alternate UMO or have knowledgeable rep

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Facilitate simultaneous APOD and SPOD operations. A UMO representative may be required at the APOD until the unit's main body departs for the theater staging base. The unit may also need a UMO representative at the TSB to coordinate unit equipment and soldier arrival. In the interim, the unit's drivers are at the SPOD preparing unit equipment for movement. The UMO cannot be at all places at once. A possible solution is to have the UMO and alternate UMO at separate locations, and a knowledgeable UMO representative at the third location. If the unit is deploying as part of a task force, the task force higher headquarters may designate personnel to be the representative at key nodes for all deploying task force units. This may alleviate the unit's requirement to have unit representatives at multiple locations. The important point is that the UMO must be knowledgeable in the numerous unit movement activities that occur at different locations for this reception scenario. Prior to departing home station, the UMO should recommend a plan to the unit commander for accomplishing unit movement tasks at the various theater nodes.

This concludes our discussion of reception scenarios.





## Scenario 3



UMOD 2.10.4.6

- Soldiers, TAT and non authorized prepositioned (NAP) items arrive APOD
- Arriving unit will draw APS from:
  - Army Prepositioned Afloat (APA) vessels that sail to the theater, or
  - Army Prepositioned Land (APL) sites located in theater

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**Our third scenario is APS operations. In this scenario, soldiers, their to-accompany troop (TAT) items, and not authorized prepositioned (NAP) items arrive at the APOD in preparation for drawing APS. APS generally contains the unit's MTO& E equipment. There are two types of APS -- APS located at theater land locations and known as Army Prepositioned Land or APL, and APS loaded on vessels which is Army Propositioned Afloat, or APA. Deploying unit's draw APS from either the fixed APS sites or from the vessels. Army Prepositioned Afloat vessels sail to theater ports of debarkation where the APS is offloaded and transferred to the unit.**



## Scenario 3 (Cont)



UMOD 2.10.4.6.4

- For APA operations, unit moves from APOD to seaport in following sequence:
  - Survey, Liaison, Reconnaissance Party (SLRP)
  - Advance party
  - PSA personnel (if required)
  - Main body
- For APL operations, advance party moves from APOD to APS site, followed by main body

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**From the APOD, the unit moves to the APS location to draw its equipment. If the unit is drawing Army prepositioned afloat, a Survey, Liaison and Reconnaissance Party (SLRP) is the first increment to move to the SPOD. The SLRP may be provided by the unit's higher headquarters and include representatives external to the deploying unit. The unit's advance party follows the SLRP. If the deploying unit is providing the PSA for the APS offload, the PSA is next to move to the seaport. The last unit element to depart the APOD is the main body, which prepares and mans the equipment for onward movement. For Army prepositioned land operations, the unit normally moves to the APS site in two increments; the advance party and the main body. We'll discuss the responsibilities of these teams and parties in upcoming slides.**





## Unit & UMO Considerations for APS Operations



**UMOD 2.10.4.6.4.**

- References are:
  - FM 100-17-1, *APA Operations*, provides doctrine and procedures for afloat operations
  - FM 100-17-2, *APL Operations*, provides doctrine and procedures for ashore operations

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**There are several key unit and UMO planning considerations for APS operations. The first is to review the primary references for APS operations. FM 100-17-1, Army Pre-positioned Afloat Operations, provides doctrine and procedures for APA operations. Appendix A to this FM contains unit level planning checklists that will assist the UMO in planning the units move. FM 100-17-2, Army Prepositioned Land, provides doctrine for APL operations.**



## Unit & UMO Considerations for APS Operations (Cont)



UMOD 2.10.4.6.4.1

- For APS operations, unit will generally operate as part of battalion or brigade size forces
- UMO gathers available information about move to APS sites before unit arrives theater
  - Coordination with Bn/Bde movement officers & S-4
  - Unit plans based on higher hq's plans

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**For APS operations, company size units will normally deploy and operate as part of a battalion or brigade size force. The battalion or brigade staff performs much of the coordination required with supporting agencies and commands. To ensure that unit movement activities and considerations are addressed, this lesson assumes that UMOs at all levels may be required to perform this coordination.**

**As with other reception operations, the UMO gathers as much information as possible about the unit's movement to the APS location prior to the unit departing home station. A principal source of information is the battalion or brigade movement officer and S3 and S4 staff. These staff officers coordinate with the higher headquarters staff responsible for receiving the deploying units. The UMO also reviews higher headquarters RSO&I plans for procedures and modes being used for movement to APS locations.**





## Unit & UMO Considerations for APS Operations (Cont)



UMOD 2.10.4.6.4.1

- Unit Commander and UMO must access ABS
  - Army Materiel Command's ABS contains:
    - + Battlebooks for APS sites / vessels
    - + APS equipment listing by UIC
    - + Equipment draw procedures & site information
    - + Unit checklists for APS operations
  - ABS info available at <http://www.battleweb.com>  
and <http://www.battlebooks.com>

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**A critical task for the Unit Commander and the UMO is to review information concerning the units APS operation within the Automated Battlebook System. The ABS contains:**

- (1) Detailed information for each APS location and APS vessel**
- (2) A listing of equipment available by site and vessel**
- (3) Equipment draw procedures and detailed information on the APS land sites**
- (4) Checklists for the unit to use in planning and executing APS draws**

**There are several sources for accessing Automated Battlebook System information. The ABS web site locations are shown on this slide. You can also obtain a CD that lists all equipment available at APS sites and on APS vessels. To obtain the CD, go to the Web address listed on this slide and access the "CD Distribution" link.**



## Army Prepositioned Afloat (APA) Reception



UMOD 2.10.4.6.4



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**APA is used to project heavy forces early in a crisis and to rapidly reinforce a lodgment established by Army early entry forces and amphibious assault forces. APA operations can take place before a mature force structure is established in theater. For crisis response operations, the goal is to have a heavy brigade within the AO as rapidly as possible and for it to be operational within eight days of beginning vessel discharge.**

**This slide shows the brigade and the SLRP movement from the APOD to the SPOD.**





## Army Prepositioned Afloat (APA) -- Key Organizations



**UMOD 2.10.4.6.4**

- Unit interfaces with and is supported by:
  - MTMC & Composite Transportation Group (CTG)
    - + MTMC is port manager, CTG is port operator
    - + CTG operates SPOD and is responsible for onward movement of equip and personnel
  - PSA: Performs normal PSA functions

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**The deploying unit interfaces with and is supported by several organizations operating in the port area where the APS vessel will offload. As with normal SPOD discharge operations, MTMC and the PSA operate in the port area.**

**(1) A MTMC cell manages the port and a composite transportation group (CTG) performs port operations. The CTG discharges the vessel and is responsible for the onward movement of equipment and personnel.**

**(2) The PSA for APA operations includes the Offload Preparation Party, which we will discuss shortly, and drivers and mechanics from the deploying units.**



## APA -- Unit Organization for APA operations (Cont)



UMOD 2.10.4.6.4.1

- PSA: Unit may be required to provide own or supplement PSA at SPOD
- Unit Main Body
  - + Receives equipment at the APA site
  - + Moves to TAA or other designated location
  - + Prepares for continued operations

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**(3) The deploying unit may be required to provide its own PSA or supplement a PSA provided by a designated supporting command. Deploying unit PSA personnel could move as part of the advance party or as a separate increment, depending on the size of the unit's PSA contingent and time available to have the PSA in place at the port.**

**(4) The unit's main body is the last increment. The main body moves to and receives equipment at the APA discharge sites. The deploying unit and its equipment then moves to the tactical assemble area or other designated location. The UMO coordinates with the CTG or supporting MCT for routes and clearances required for convoy operations to the units destination.**





## APA -- Unit Organization for APA Operations



UMOD 2.10.4.6.4

- Survey, Liaison, Reconnaissance Party (SLRP)
  - Includes reps from deploying unit, MCT, AMC & port commander
  - Arrives SPOD prior to APA vessel arrival
  - Purpose:
    - + Reconnaissance, liaison with theater authorities
    - + Prepare for advance party & main body arrival

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**We'll now discuss the unit organization for APA operations. The unit moves from the APOD to the APA port locations in increments. The first increment is the Survey, Liaison, Reconnaissance Party (SLRP), followed in order by the Advance Party, PSA personnel and the unit's main body. Remember that these increments may be from battalion or brigade size units that are drawing APA equipment. (1) The SLRP is a task organization that arrives in theater at least 5 to 7 days prior to the arrival of the APA vessels. It is deployed by direction of the ASCC commander. The organization includes representatives from the deploying units drawing APA stocks, the port commander, movement control teams, and an Army Materiel Command Logistic Support Element. The purpose of the SLRP is to conduct initial reconnaissance, establish liaison with theater authorities and support organizations, and to prepare for advance party and main body arrival.**



## APA -- Unit Organization for APA operations (Cont)



UMOD 2.10.4.6.4.4

- Advance Party
  - Formed from deploying unit(s)
  - Primary tasks:
    - + Arrange for reception of unit main body
    - + Rendezvous with APA ships
    - + Assist in port support and discharge operations
  - Should include battery teams, fuel handlers, drivers, property book & supply personnel

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**(2) The advance party is formed from the deploying unit. If the deploying unit is battalion or brigade size, subordinate companies will generally provide representatives. The primary tasks of the advance party are to arrange for reception of the main body, rendezvous with the APA ships, and to augment the PSA, if required. As a minimum, the advance party should include battery teams, fuel handlers, drivers for wheeled and tracked vehicles, and property book and supply personnel.**





## APA -- Unit Organization for APA operations (Cont)



UMOD 2.10.4.6.4.4

- PSA: Unit may be required to provide own or supplement PSA at SPOD
- Unit Main Body
  - + Receives equipment at the APA site
  - + Moves to TAA or other designated location
  - + Prepares for continued operations

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**(3) The deploying unit may be required to provide its own PSA or supplement a PSA provided by a designated supporting command. Deploying unit PSA personnel could move as part of the advance party or as a separate increment, depending on the size of the unit's PSA contingent and time available to have the PSA in place at the port.**

**(4) The unit's main body is the last increment. The main body moves to and receives equipment at the APA discharge sites. The deploying unit and its equipment then moves to the tactical assemble area or other designated location. The UMO coordinates with the CTG or supporting MCT for routes and clearances required for convoy operations to the unit's destination.**



## Army Prepositioned Land (APL) -- Unit Organization for APL Operations



UMOD 2.10.4.6.4

- Unit Advance Party
  - Moves from APOD to APL location
  - Signs for unit APS equipment
  - Moves Equipment to marshaling area in vicinity of APL site

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ositioned Land

operations. Information on APL site locations and their equipment can be obtained from the Web addressees and POCs previously identified.

The deploying unit is organized into an advance party and main body for APL operations. After arrival at APOD, the advance party moves to the APL location in theater. The UMO or a UMO representative at the APOD coordinates the move with the supporting movement organization or MCT. This process is much the same as we discussed for Army Prepositioned Afloat Operations, so we won't address it in detail again. When the advance party arrives, it signs for the equipment and uploads commodity items onto the vehicles. It then moves vehicles and equipment to a marshaling area in the vicinity of the APL site. The advance party then begins initial preparation for onward movement.

Under some circumstances, the main body moves directly from the APOD to a marshaling area near the APL site and joins that advance party for movement to a staging base or other location. In other instances, however, the main body does not link up with APL equipment until the materiel is transshipped to another location.

To this point in the lesson we have covered the various activities and responsibilities for three reception scenarios that the unit could encounter. We'll now look at the staging, onward movement and integration





## Staging



**UMOD 2.10.4.7**



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**Staging takes place in controlled areas called theater staging bases. As we discussed earlier, TSBs are required in part because space limitations do not facilitate reassembling combat units at the SPOD/APOD. TSBs are large facilities that provide numerous support activities focused on quickly reassembling the unit for employment in the theater.**



## Staging (Cont)



UMOD 2.10.4.7.A

- Staging Process:
  - Reassemble and reunite units with their equipment
  - Upload unit basic loads
  - Prepare and schedule units for onward movement to TAA
  - Provide life support until unit is self sustaining

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facilitates the

following activities:

(1) Reassembling and reuniting the unit with its equipment. As soldiers and their equipment normally move separately from PODs to the staging base, they must be reassembled to become an effective combat force.

(2) Uploading the unit's basic loads. This involves loading and securing the units basic load of supplies and equipment onto unit vehicles or other transportation assets for onward movement.

(3) Preparing and scheduling units for onward movement to TAAs. Unit equipment is configured for onward movement based on the onward movement mode. Movement control organizations in the TSB schedule the unit's movement in accordance with the Joint Force Commander's priorities.

(4) Providing life support. When soldiers arrive at the TSB they have a limited life support capability. The ASG provides life support functions until the unit is capable of supporting





## Theater Staging Base (TSB)



UMOD 2.10.4.7

- TSBs provides an arm, fuel, fix capability. They include:
  - Marshaling areas, maintenance shelters
  - Equipment calibration, weapons boresighting
  - Fuel and ammo storage
  - Test driving loop and range areas

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**Theater Staging Bases are organized with an arm, fuel and fix capability to support arriving units. Equipment may require maintenance before it becomes combat ready. Parts damaged in transit will need to be replaced. Vehicles will require refueling and may need painting before entering the TAA. TSB capabilities and facilities include:**

- (1) Marshaling areas for vehicles and containers, and maintenance shelters**
- (2) Equipment calibration and weapon boresighting**
- (3) Fuel facilities and ammunition storage areas**
- (4) A test driving loop and weapons ranges**



## Theater Staging Base Layout (Notional)



**UMOD 2.10.4.7**



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**Shown on this slide is a notional theater staging base. Note, although this is not always possible, it is preferable that the TSB have the capability for rail operations and a test loop for ensuring vehicles and tracks are operational.**





## TSB -- Unit and UMO Movement Tasks



UMOD 2.10.4.7

- Coordinate with MCT for onward movement schedule and movement procedures, by mode.
- Reconfigure unit equipment for onward movement mode (rail, road, inland/coastal water)
- Process necessary movement documentation (convoy requests, rail load plans)
- Coordinate with supporting units responsible for rail loading and convoy assembly operations.

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responsible for  
the deploying unit and UMO

have responsibilities for preparing the unit for onward movement.

(1) The UMO coordinates with the MCT for the unit's movement mode and schedule for onward movement to the TAA.

(2) Based on the mode and schedule, the unit reconfigures its equipment for movement by road, rail or water, or a combination of modes.

(3) The UMO then prepares the required movement documentation such as convoy requests or rail load plans. Due to host nation procedures and special requirements, representatives from the theater movement control agency or MCTs provide assistance to the deploying unit.

(4). The UMO also coordinates with supporting units in the TSB that are responsible for operating railheads and convoy assembly areas. These units provide the detailed procedures the deploying unit will follow for loading railcars and for staging convoys for onward movement.

After the unit has reassembled and reached the desired capability in the TSB, it begins the



Onward movement is the third RSO&I process. Units move to their tactical assembly areas based on the Joint Force Commander's priorities.





## Onward Movement (Cont)



- Onward Movement Process:
  - Moving units & materiel from reception facilities and staging bases to TAA or other destinations
- Onward movement is normally planned, scheduled and controlled by movement control agencies, battalions and teams.
- Numerous forces and host nation traffic may be competing for movement over same LOC.

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**Onward movement is the process of moving units and materiel from reception facilities and staging bases to tactical assembly areas or other designated locations. Not all units will reassemble at theater staging bases. Many units will assemble at the SPODs and move directly to their TAAs. The onward movement process must be capable of scheduling and controlling onward movement requirements that have multiple origins and destinations. Due to the numerous requirements that normally occur in onward movement, the theater movement control agency or movement control battalions' plan, schedule, and control unit movements within the theater. Control is particularly critical as US forces may be competing with Allies and Host Nation traffic for use of the same highway and rail infrastructure.**



## Onward Movement -- UMO Considerations & Tasks



**UMOD 2.10.4.8.**

- UMO tasks essentially same as covered in APOD/SPOD preparation for onward movement
- Support facilities, such as convoy support centers, may be established to support unit onward movement
- Security concerns can impact unit organization for onward movement

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**UMO tasks to prepare for onward movement are essentially the same as the UMO tasks covered in the APOD/SPOD and TSB preparation for onward movement. There are, however, several different considerations. Depending on the length of the ground lines of communications, convoy support centers may be established to support onward movement. ASGs or other designated support units normally operate these facilities. Support centers could also be established at temporary airfields, rail sites, and waterway drop off points. The UMO will be informed of support provided for the unit's onward movement. Security from enemy or terrorist attack can be a concern during onward movement. Based on the security condition, the unit may have to reorganize its vehicles, soldiers, and weapons systems to ensure heightened security. These procedures are identified in the theater staging base and the unit reorganizes for movement as necessary to counter the threat.**





## Integration



**UMOD 2.10.4.9**



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**During integration combat units are merged into the operational plan. This transition normally takes place in the tactical assembly area.**



## Integration Process



UMOD 2.10.4.9.

- To achieve integration, the unit:
  - Must become operational and mission-ready
    - move, fight and communicate
  - Must be absorbed into the joint force
- Integration is complete when receiving commander establishes command & control over arriving unit

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**During the beginning of this lesson we briefly discussed the points on this slide, but it's worth repeating. The objective of RSO&I operations is force closure. This is the point at which the JFC determines that adequate, combat-ready forces are available to implement the concept of operations. RSO&I is not over until the deploying unit has completed the integration process. There are two criteria for achieving integration**

- (1) The unit must become operational and mission ready, and**
- (2) The unit must be absorbed into the joint force.**

**The integration process is complete when the commander receiving the deploying force establishes command and control over the arriving unit.**